THE

physical therapy

REVIEW

Volume 32 - Number 11 November 1952

Physical Therapy Program for the Upper Extremity Amputee — JAMPOL

Physical Therapy in the Treatment of Schizophrenic Catatonic Patients — ISAACS

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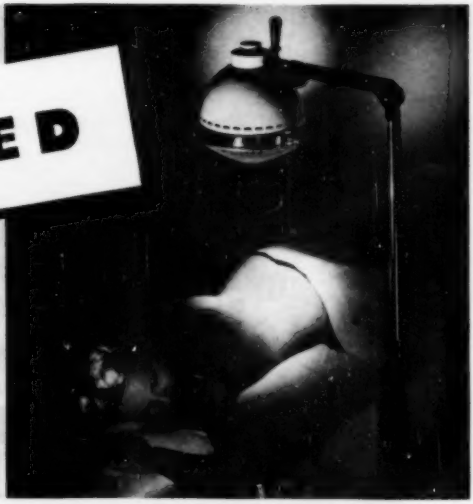

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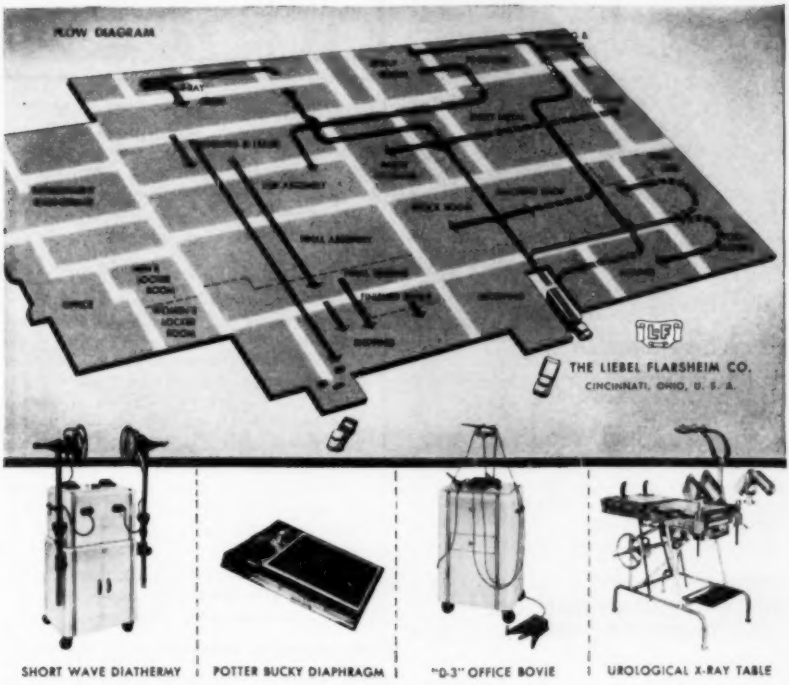

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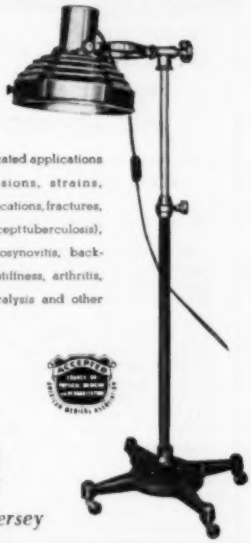

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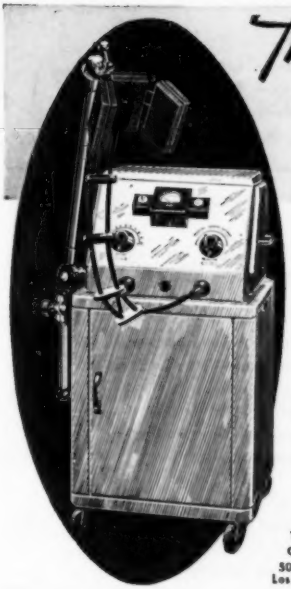

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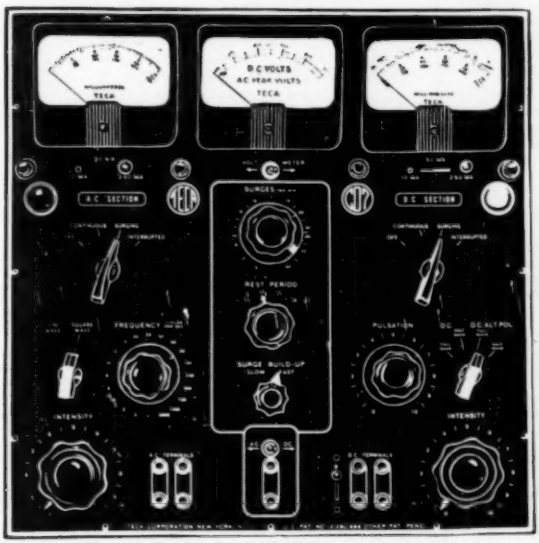

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THE physical therapy REVIEW

552 Vol. 32, No. 11

published monthly by the
American Physical Therapy Association
at 1790 Broadway, Room 1315
New York 19, N. Y.

Editor: E. Jane Carlin

Associate Editors: Sara J. Houtz, Mary E. Kolb, Beatrice Whitcomb

Managing Editor: Carol Vance

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Membership in the American Physical Therapy Association is $15.00 a year, including a subscription to THE PHYSICAL THERAPY REVIEW. Subscriptions for nonmembers to THE PHYSICAL THERAPY REVIEW, $6.00 a year; $6.75 in Canada and foreign countries. Single copies 75 cents. (50 cents to members.) Reentered as second class matter August 11, 1949, at the post office at New York, N. Y., under the act of August 24, 1912.

The statements in the manuscripts published in THE PHYSICAL THERAPY REVIEW are made solely on the responsibility of the author. The American Physical Therapy Association does not assume any responsibility for statements contained therein. Manuscripts accepted for publication in THE PHYSICAL THERAPY REVIEW are for exclusive publication and may not be published elsewhere without permission.

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Table of Contents:

Physical Therapy Program for the Upper Extremity Amputee—Hyman Jampol . . **553**

Physical Therapy in the Treatment of Schizophrenic Catatonic Patients—Arnold Isaacs **559**

Physical Therapists in the Army—Emma E. Vogel **561**

Modified Physical Therapy Plinth—Helen Kennon **579**

Our Book Reviewers for November . . . **558**

Meet Our New Contributors **578**

Index to Current Literature **580**

Reprints Available **581**

Editorials **582**

World Confederation for Physical Therapy **584**

Association Activities **585**

Membership News **589**

General News **590**

Schools of Physical Therapy **593**

Abstracts **595**

Book Reviews **602**

Chapter Directory **607**

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The Physical Therapy Review

Official Publication of The American Physical Therapy Association

Volume 32 **November 1952** **Number 11**

Physical Therapy Program for the Upper Extremity Amputee

Hyman Jampol, M. A.

Recent advances in prosthetics technology promise a brighter future for the upper extremity amputee. New devices, such as the voluntary closing hook and hand, the two load hook, the shoulder operated elbow lock, and many other arm components provide increased function in the upper extremity prosthesis. These have passed from the research, development and testing laboratories to the amputee, and their utilization now becomes paramount.

No matter how ingenious the device, it is the user who ultimately determines its success; that is, the degree to which it assists in his rehabilitation. Before this can be clearly established, the amputee must be trained in the use of his prosthesis. Furthermore, if the condition of the stump or its surrounding joints is such that proper motions cannot be accomplished, training for the alleviation of these conditions should be given. Three phases of training are essential in order to insure maximum functional use. They are:

Physical Therapy: the training in body mechanics as required for normal and prosthetic function.

Prosthetic Controls Training: instruction and practice in the body control motions necessary to operate the prosthetic controls.

Prosthetic Use Training: training in the use of the prosthesis in relation to daily living requirements.

Assistant Engineer, Artificial Limbs Research, University of California, Los Angeles.

Amputees returning for replacement prostheses as well as new amputees receiving their first prostheses, should be examined to determine which, if any, training phase is incomplete or inadequate, and an appropriate program of rehabilitation started. This paper deals only with the physical therapy program.

I. The Team Approach to Physical Therapy and Training

One of the concepts of amputee service which has emerged from the research program sponsored by the Advisory Committee on Artificial Limbs, part of the National Research Counsel, is that of the prosthetic team, composed of surgeon, physical therapist, prosthetist, and trainer. Its activity is coordinated by the surgeon in charge of the case. He is responsible for the prescription, but each member, after interviewing and observing the amputee, can contribute to its content. For example, the prosthetist discusses the manner of harnessing best suited to the patient, taking into consideration his needs and desires. The physical therapist may indicate deviations in body mechanics which must be corrected before fitting can be accomplished. The trainer anticipates training difficulties and suggests methods of dealing with them. When all aspects have been discussed thoroughly the prescription is made and copies are distributed so that each member of the team will be

properly informed as to his role. For example, the prescription includes a description of the manner of harnessing and thus indicates to the physical therapist the control motions necessary to operate the prosthesis. If the amputee cannot perform these motions he must be trained to do so before he receives his prosthesis.

Thus, the training program for the amputee should provide him with a suitable stump with good joint motion—the responsibility of the physical therapist—and a knowledge of prosthetic operation coupled with the ability to perform the activities of daily living—the responsibility of the trainer.

The Physical Therapist

Physical therapy must be given by a qualified physical therapist who is a graduate of an accredited school. Beyond that, he also must have a knowledge of prosthetic operational characteristics and the biomechanics involved so that the preprosthesis physical therapy will properly prepare the amputee for prosthesis use.

The Trainer

A physical therapist may qualify also as trainer, or this place may be filled by an occupational therapist or an amputee. Physical therapists and occupational therapists qualify by way of their education and experience in the treatment of handicapped persons, but must acquire knowledge of the mechanics of prosthetic operation and construction. Amputees who operate their prostheses with skill and dexterity have the advantage of establishing rapport with the patients by virtue of their example, but require additional backgrounds of knowledge of the basic sciences, prosthetic mechanics, and patient treatment.

II. Physical Therapy

The condition of the stump and its surrounding joints will determine whether or not a successful fit, interpreted in terms of functional utility, can be achieved. This means that these parts must be prepared for their role. While some of the training will be done in the hospital during the convalescent period, a good portion needs to be done after this time, both while awaiting the prosthesis and after the amputee receives his artificial arm.

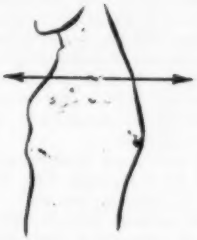
Physical therapy for the amputee aims to: (a) provide the amputee with musculature of suitable strength to operate the prosthesis and in some cases to develop the size of certain muscles to increase the stability of the socket on the stump; (b) increase the range of motion of the joints of the upper extremity in order to provide adequate excursion for the operation of the prosthesis and (c) correct faulty body mechanics that arise from the abnormal weight distributions in the amputee.

A. Immediate Postoperative Physical Therapy

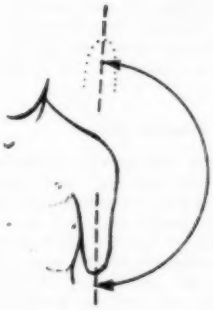
From the time of surgery onward two categories of tissue exist; those tissues which have been divided, and those which remain undisturbed. The responsibility for the treatment of the divided tissues has been described elsewhere (Strong). However, during this time, changes also may occur in the undisturbed tissues, such as limitation of motion of a joint which has been immobilized over a period of time and which will hinder efficient prosthesis use. In order to prevent this all joints proximal to the site of amputation should be moved through their full range of motion at least three times daily. For the shoulder disarticulation case abduction and adduction, and elevation and depression of the shoulder girdle are the motions to be practiced. These should be done bilaterally, for these cases must use the sound shoulder as the motive power. For the above-elbow amputee the same motions are necessary, to which must be added flexion and extension, medial and lateral rotation, and abduction and adduction of the humerus. The below-elbow case must add flexion and extension of the forearm and pronation and supination to this regime. These should be done voluntarily by the patient if possible; if not, the physical therapist can manually move the limb through the range of motion. This passive movement is the same type of treatment method used in the stretching of tight musculature and joint capsules for patients with a "frozen" shoulder or limited range of motion resulting from various causes. Stretching should be employed in conjunction with active movement until the patient can voluntarily move the limb through a full pain-free range. These treatments can be started immediately following surgery unless, of course, contraindications are present. Figure 1 indicates these motions for various amputation sites.

When healing has been well established, mild contractions of the musculature of the remaining extremity should be initiated. The patient contracts his muscles, but not against resistance.

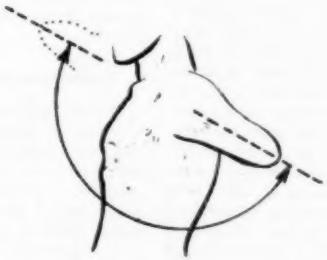
Shoulder: Elevation-Depression



Shoulder: Abduction-Adduction



Humerus: Abduction-Adduction



Humerus: Flexion-Extension

Humerus: Medial-Lateral Rotation

Forearm: Pronation-Supination

Forearm: Flexion-Extension

Figure 1. Exercises for Shoulder, Arm, and Forearm Stumps

This process assists the circulation, prevents adherence of scar tissue and aids in the reduction of edema. Massage also assists in preventing adhesions and if done skillfully will tend to overcome the amputee's fear and apprehension of having the stump handled. These technics should be continued until complete healing has occurred.

After the wound has healed completely, training should be intensified with three aims in view: (a) to increase the range and strength of arm and forearm motion; (b) to increase the size and contractile range of the biceps muscles; and (c) to correct faulty body mechanics.

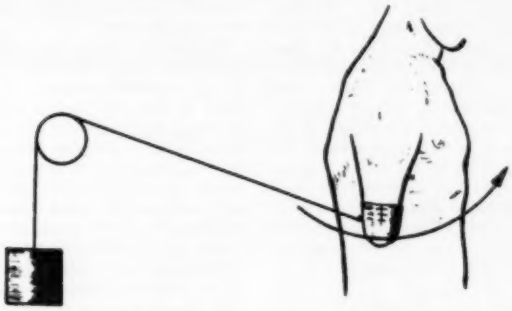
B. Conditioning the Shoulder and Arm Stump

It is imperative that an upper extremity amputee have a mobile shoulder girdle, since limitation of motion of any segment will result in a corresponding limitation of other segments. For example, limitation of scapular motion on the thorax will restrict the extent of humeral motion possible. Thus, it can be seen that exercises designed to maintain a freely mobile shoulder girdle are necessary. These must be done bilaterally, as the amputee uses both shoulders for prosthetic operation, whether it be for actual motive power or for "body english." Hence any limitation of motion would impair prosthetic function. The exercises should consist of elevation of the shoulders and abduction and adduction of the scapula, both free and against resistance. Those exercises performed against resistance should be performed according to the De Lorme system. Figure 2 illustrates the exercise methods which should be employed.

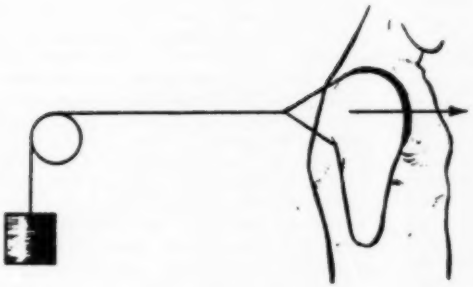
Flexion of the humerus, which in the most frequently used above-elbow harness control, i.e., the "dual control," is the source of power for both forearm flexion and prehension, must be developed to provide the amputee with a strong "motor" through a full range of movement. Extension of the humerus, which is utilized as a control movement for the elbow lock, must also be practiced. Exercise, both free and against resistance as illustrated in Figure 2b, should be used routinely at least twice daily. When the above-elbow amputee moves his prosthesis into abduction or flexion, or a combination of these, there is a tendency for the prosthesis to rotate medially. The amputee can control this, as he does in the normal arm, by the utilization of the medial and lateral rotators of the arm. One of the criteria for harnessing is that the amputee should be able to rotate his prosthesis medially and laterally with the arm abducted and slightly flexed. The development of these muscles can be carried out as for the biceps by going through the full range and then contracting "hard." Unilateral amputees of long standing may have lost the ability to control these muscles, consequently the technics of muscle reeducation may need to be utilized. Contraction of the muscles in the sound arm simultaneously with the affected muscles is an effective procedure to reestablish control of disused muscle groups. Upon receipt of the prosthesis the amputee should be instructed in the manner of utilizing these motions. A dual purpose is then accomplished; resistance is offered to the rotators, thus developing their strength to a greater degree, and a pattern for use is established.

C. Conditioning the Forearm Stump

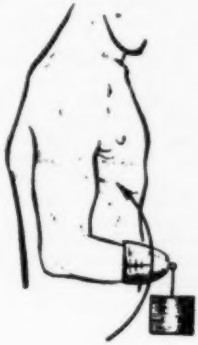
For the below-elbow amputee the movements of forearm flexion and extension, and pronation and supination, must be developed through their full range. It is hardly necessary to point out that a limitation of forearm flexion prohibits use of the prosthesis in the most vital action spheres, i.e., the mouth and the chest. It is conceivable that the amputee would discard his prosthesis after finding it impossible to perform simple tasks as a result of a limitation of flexion. Exercises should be performed as shown in Figure 2c. The harnessing of pronation and supination is difficult at best; and if this is complicated further by a limitation of these motions, the problem of providing the amputee with adequate forearm rotation becomes almost insurmountable. Even with the "step-up" rotation unit, at least 60° of rotation should be present in the stump in order to give the amputee a functional range of prosthetic motion. If the range of pronation and supination is limited, passive stretching should be initiated. This should be done by the physical therapist at least twice daily and continued by the amputee at home or in the ward. When some degree of mobility has been achieved, active pronation and supination should be practiced by the amputee. During these motions the patient should pronate through his complete range and then contract "hard" at the end of the range. This has the effect of stretching the various limiting tissues as well as developing the strength of the muscles. The procedure should be repeated in supination.



a. Resistive Apparatus for Development of the Shoulder



b. (above) Resistive Apparatus for Development of the Arm.



c. (right) Resistive Apparatus for Development of the Forearm.

Figure 2. Methods of providing resistance to stump motions. With the indicated apparatus, resistive exercises can be designed for all of the motions diagrammed in Figure 1.

D. Developing the Residual Biceps

The above-elbow amputee has available an additional resource, exclusive of harnessing, for increasing the stability of the prosthetic socket. This is based on contraction of the biceps, thus bulging it against the socket and improving stability both by increasing the pressure on the socket and by "firming" the stump. Exercises to develop the biceps can be carried out simply by having the amputee contract his muscle strongly. This technic is in keeping with the principles of progressive resistance exercises, except that the amount of resistance is unknown. While no forearm flexion is possible, and natural resistance to the biceps cannot be accomplished, the tight invest-

ing tissue provides resistance enough to encourage biceps development. The amputee should contract his muscle to its greatest capacity and then attempt to contract even "harder," thus stretching the surrounding tissue and increasing the contractile range and strength of the biceps muscle. These exercises also aid in decreasing the excess tissue of the flabby stump which often creates a difficult fitting problem. The arm stump that is large, soft and flabby is extremely difficult to fit with a comfortable prosthesis that functions well. This is because the bone has a tendency to move within the soft tissue as the stump is used at a lever to raise the prosthesis.

E. Correcting General Body Mechanics

The correction of various postural deviations should be given attention. Because of the loss of the weight of the part and the resultant shift in the center of gravity, and because of the atrophy of the musculature on the side of the amputation, the upper extremity amputee may develop scoliosis with or without compensatory curves. These deviations should be corrected in order to obtain better appearance and to place the muscles in the proper anatomical position for use. Cases have been seen in which a difference of 1.5 inches existed between acromial heights measured from the floor. Scoliosis exercises should be performed as advocated by Reilly, Truslow, Woodcock and others, so that at least partial, if not complete realignment of the bony parts may be accomplished. In addition, passive stretching of the elevator muscles of the shoulder (trapezius, levator scapulae, rhomboids) should be carried out to assist both in freeing the movement of the shoulder and in maintaining the shoulder level.

During the time the amputee is receiving physical therapy the fitting and construction of the prosthesis should also be progressing. Thus, at the end of the treatment period the prosthesis is ready and the second phase, prosthetic control training proceeds. Here again team cooperation is exemplified. Liaison between physical therapist, prosthetist, and training specialist will insure the proper adherence to schedule. In this way the amputee is made aware of the continuity of the whole amputee service and given a feeling of logical progress, which prepares him for the work which he will be called upon to do.

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Our Book Reviewers for November

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Physical Therapy in the Treatment of Schizophrenic Catatonic Patients*

Arnold J. Isaacs, B. S.

The schizophrenic catatonic patient may be listed among those groups, who will spend many years in a neuropsychiatric hospital. Unfortunately, many will never return to society. Their long hospital stay and their susceptibility to many disabilities and infections, make these patients frequent candidates for treatment in the physical therapy clinic of any neuropsychiatric hospital.

In February of 1947, a program designed especially for the treatment of the catatonic patient was initiated in the Physical Therapy Section of the Brentwood Neuropsychiatric Hospital, Veterans Administration Center, Los Angeles, California. The physical therapists were faced with the problem of stimulating and rehabilitating these withdrawn patients. Their physical aspect demanded immediate priority since the greater percentage was underweight, had skin of a yellow pallor, and a constant nasal discharge. Many drooled; almost all were stooped with heads bent forward (a posture conducive to fatigue). Many had peripheral vascular disturbances and ulcers on their lower extremities due to a stasis from remaining motionless in a standing position for long periods of time. Since there were seventy-four of these patients, all in a similar condition, the concept of individual therapy was out of the question at that time. After numerous conferences with the ward surgeon and with the chief of physical medicine, it was recommended that all patients receive the following treatment:

1. Two exposures to ultra-violet light, in the supine and prone positions, for a period of one minute, at a distance of 30 inches.

2. From four to six minutes in an electric cabinet (Thermal Bath).

3. A needle shower.

4. A Scotch Douche.

The rationale behind these treatments and the objects hoped for are outlined as follows:

(1) The ultra-violet was prescribed to
   a. aid in the healing of skin lesions common in this type of patient
   b. increase the hemoglobin count
   c. increase metabolic efficiency since the basal metabolism rate is usually low in the catatonic patient
   d. improve tone, color, and elasticity of the skin
   e. improve muscular tone

(2) The cabinet bath, maintained at a temperature ranging between 125 degrees and 130 degrees Fahrenheit, was prescribed to
   a. increase general circulation
   b. induce perspiration and aid in general elimination
   c. take advantage of the stimulating effect of heat administered for a short period of time

(3) The needle shower at 102 degrees F., was prescribed to
   a. cleanse
   b. allow body temperature to return to normal

(4) The Scotch Douche, hot at 102 degrees F. and cold at 78 degrees F. was given to
   a. stimulate
   b. increase circulation to the periphery
   c. increase metabolic rate
   d. decrease debility

Except for observing all contraindications in individual cases, all seventy-four patients were treated in a like manner. Patients with definite physical lesions were treated with specific and accepted procedures. Peripheral vascular cases were treated with intermittent

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* Reviewed by the Veterans Administration and Published with the approval of the Chief Medical Director. The statements and conclusions of the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

venous occlusion and encouraged to learn specific exercises. Ward aides were instructed in these exercises and helped the patients on the ward. Patients were encouraged to correct their posture and again the ward attendant was instructed in ways to assist this program. "Try and keep your head up, Mr. B." was a common phrase on the ward as well as in the physical therapy clinic. It was noticed that due to the faulty dressing habits of the patients, the counters of their shoes turned under. As a result, within a few days a large bleb would appear on the heel. The dressing method was revised, and the blisters treated with whirlpool and cold quartz ultra-violet. It must be remembered that these patients do not have the recuperative powers that are found in more active patients, and unless these lesions are treated from onset carefully and tenaciously, the lesion will persist for months and usually will be complicated by infection. Colonic irrigation was prescribed for impactions that were frequent, due to the slowing down of the entire metabolic process. All ailments and disabilities were treated as they occurred and with dispatch.

This physical therapy program was part of a comprehensive treatment plan in which psychiatrists, nurses, and other hospital personnel participated. The response of the patients was gratifying. Most weights moved toward a normal level, upper respiratory infections were cut to the normal minimum, and skin lesions were disposed of as they occurred. Metabolic rates moved toward the normal, and most feeding problems were eliminated. The men were more active and began conversing with the therapists. At this point the psychological impact of physical therapy technics and modalities was recognized.

It has been learned that the treatments originally prescribed on a straight physiological basis were also of psychological benefit. The tan acquired through continued use of ultra-violet gave some patients a socially acceptable form of narcissistic gratification, while the period in the cabinet gave the attending physical therapist time to create active friendships with the patients. It was noted that the patients would often "loosen up" while under treatment and make known their needs and wishes to the therapist. Some patients received relief from guilt feelings from the Scotch Douche, while others under the same treatment would voice expressions of hostility, a reaction often desired from the withdrawn patient.

The patients have come to know physical therapy, and tell the therapists about their "aches and pains" and which treatment does them the "most good." We have learned to allow the patient some latitude in selecting a particular treatment procedure since it is felt that complying with these requests has a beneficial effect. It is an interesting fact that over 90 percent of the patients have requested all procedures.

Since the initiation of this program, many men have returned to their place in society and others have entered the group. As it continues, other phases of rehabilitation including occupational therapy, physical education, educational therapy, and recreational therapy, have entered into the treatment of the catatonic, and contributed much to the program.

SUMMARY

The ward surgeon coordinates the various treatment procedures for the catatonic patient. Under direction of the chief of physical medicine, catatonic patients have been treated with ultra-violet light, electric light cabinet, and Scotch Douche. This treatment has had definite beneficial effects—physical and psychological.

Physical Therapists in the Army

PART II

Col. Emma E. Vogel, United States Army, Retired

PHYSICAL THERAPISTS — WORLD WAR II

I. Establishment of A Civilian Physical Therapy Branch

Late in January 1942, the Supervisor of Physical Therapists at Walter Reed General Hospital was directed to report to the office of The Surgeon General on a part-time basis, for the purpose of establishing a Physical Therapy Branch in that office. On August 24, 1942, she was promoted to the position of Superintendent of Physical Therapists in the Army (P-3) and assigned on a full-time basis in the Civilian Personnel Division in that office.

Since the procurement of physical therapists to meet the constantly increasing needs of the Army was her first major problem, the Superintendent of Physical Therapists made an extensive study of the availabilities of this personnel from civilian sources, and as might be expected, the results were far from encouraging. Immediate expansion of the Medical Department's physical therapy training program appeared to offer the only solution.

Early in 1942, when it was necessary for dietitians and physical therapists to accompany hospital units overseas, The Surgeon General expressed grave concern over the lack of protection afforded them as civilian employees, and recommended that a study be made as to the advisability of authorizing a military status for these groups. In support of his recommendation, The Surgeon General stated that the services of this personnel were essential to the proper care of patients in Army hospitals and that they were, therefore, subject to the same vicissitudes as members of the Army Nurse Corps, and should receive the same consideration as to retirement, insurance protection, medical care and allied benefits. Further study revealed that since dietitians and physical therapists worked very closely with nurses in Army hospitals, it would be highly desirable to have all of these women on the same status.

As a result of these studies the War Department recommended that the Congress enact legislation to authorize a military status with relative rank in the Army of the United States for dietitians and physical therapists in the Medical Department of the Army. This was accomplished with the passage of Public Law 828 (77th Congress) on December 22, 1942. The Bill authorized the inclusion of female dietitians and physical therapists in the Medical Department of the Army for the duration of the war and six months thereafter, and provided that these employees be afforded the same rights, privileges, benefits and gratuities as members of the Army Nurse Corps. This law also provided that in computing the period of service for pay purposes, credit be given for all active full-time service (except as student and apprentice physical therapists) rendered in the civilian status in this category prior to appointment under this Act. The Act also provided that the position of civilian physical therapist in the Army Medical Department be terminated on March 31, 1943, the final date of change-over from the civilian to the military status.

The first physical therapist to be appointed in the military status under the provisions of Public Law 828 was Major Emma E. Vogel who, on recommedation of The Surgeon General, was appointed as Director of Physical Therapists, Medical Department of the Army on January 12, 1943.

II. Establishment of A Military Physical Therapy Branch

Immediately upon the appointment of the Director of Physical Therapists, a military branch of Physical Therapy was established in the office of The Surgeon General. Since procurement of personnel was the problem to be considered first, it seemed appropriate that this new branch be a part of the Military Per-

Part I of this article, "Physical Therapists in the Army: A History from World War I through World War II," appeared in the September issue of the *Physical Therapy Review*.

sonnel Division, where close liaison could be maintained with the Personnel Procurement Branch of that division.

The duties of the Physical Therapy Branch as first described included the following functions: determine over-all personnel policies concerning physical therapists; procure, appoint, assign, reassign, promote, and discharge all personnel in this category; supervise the physical training program, and select, assign, and reassign all trainee personnel. As the branch became organized, its functions were expanded to include the following duties: recommend concerning Tables of Organization and Distribution; establish standards for physical therapy procedures; make inspections of physical therapy activities in Army hospitals; prepare training manuals and instructional guides; advise on physical therapy equipment and floor plans; and review professional material pertaining to this field submitted for publication and recommend concerning acceptability of such material to the Medical Department.

The transition from the civilian to the military status was enthusiastically received by all physical therapists and they accepted their additional responsibilities as officers in The Army of the United States with an eagerness to cooperate in every way possible. The street and hospital uniform was the same for all female officers of the Medical Department except as pertained to insignia, which for physical therapists consisted of a gold caduceus with the letters "PT" in black and brown superimposed.

After the passage of Public Law 828, all officers newly appointed as physical therapists who had had no previous service in Army hospitals were required to complete a course of Basic Military Training. This course ranging from one to two months in duration which was originally planned for members of the Army Nurse Corps, consisted of an orientation to army regulations, customs of the service, wearing of the uniform and other pertinent subjects and facilitated the transition from the civilian to the military status. This course proved invaluable, particularly for those officers who went overseas.

In the change-over from the civilian to the military status, the requirements for the continued service of physical therapists precluded the granting of annual leave which had accrued to these employees as civilians prior to March 31, 1943. It was first thought that these employees were protected in respect to their accrued annual leave by the Act of August 1, 1941, which provided that civilian employees of the federal government who entered on active duty in the Armed Forces would be compensated for all accrued leave. The Comptroller General did not concur in this opinion, however, and it was later necessary to recommend legislation to correct this situation. This was accomplished with the passage of Public Law 500 (79th Congress) on July 11, 1946.

After a year of experience in the military status with relative rank, there appeared to be certain inequities which required correction in order to place officers appointed under Public Law 828 on the same status as all other officers in the Army of the United States. Early in 1944, The Secretary of War therefore recommended that the Congress enact legislation to rectify the situation. The most important feature of the proposed legislation was that its enactment would provide for retirement for physical disability the same as for all other officers. Public Law 350 (78th Congress), passed on June 22, 1944, authorized the temporary appointment of physical therapists in the Army of the United States with full military status for the duration of the war and six months thereafter. Executive Order No. 9454 dated July 10, 1944, which implemented this law, constituted the authority for directives subsequently published by The Adjutant General of the Army. These directives contained instructions concerning the change-over from the relative to the full military rank status, and stated that the use of the terminology "physical therapy aide" would be discontinued and the term "physical therapist" substituted. Unless an officer expressly declined such appointment in writing, all officers affected by this law were considered as having accepted appointment in the full military status on July 10, 1944. Since there were no physical therapists who chose to remain in the relative rank status, very few administrative changes were necessary.

A. Personnel Procurement

Of the three hundred and fifty-four civilian physical therapists on duty in Army hospitals early in 1943, two hundred and seventy-nine accepted appointment in the Army of the United States; seventy-five either failed to meet the physical or age requirements or had dependent children.

Subsequent to the passage of Public Law 828, the recruitment of physical therapists by

the American Red Cross was discontinued, and in June 1943, the Officer Procurement Service of the Army assumed the responsibility for these activities. Since this organization was well established and maintained offices in all large cities, the inclusion of procurement of physical therapists presented few additional problems. Publicity material prepared and circulated by the Officer Procurement Service contained the qualifications for appointment as a physical therapist stated as follows: (1) women less than forty-five years of age; (2) no dependents under fourteen years of age; (3) citizenship in the United States or in a co-belligerent or friendly nation; (4) physically qualified as prescribed in Army regulations; (5) completion of not less than two years in an approved college or university with emphasis on physical education or the biological sciences, or graduation from an accredited school of nursing, and in addition, satisfactory completion of a physical therapy course approved by The Surgeon General. Applicants could be married or single. If married, the applicant was required to submit an affidavit stating that her married status would in no way interfere with her assignment if, when and where needed.

Due to the limited number of qualified physical therapists available from civilian sources, the number of appointments made through the Officer Procurement Service was only fifteen percent of the total number of physical therapists. However, through a well planned and integrated publicity program, that organization performed an invaluable service to the Medical Department, in that the general public was made acutely aware of the term "physical therapist," the rapidly increasing need for this personnel in the Army, and the necessity for an accelerated training program. The Director of Military Personnel and the Director of Physical Therapists, Office of The Surgeon General, participated in many of the meetings held under the auspices of the Officer Procurement Service which were most stimulating. While there is no definite information available as to the number of appointments which resulted from these meetings, there was no question about the up-swing of interest in the Army's physical therapy training program as evidenced by hundreds of inquiries received in the Physical Therapy Branch. The American Physical Therapy Association supported and cooperated with the publicity program initiated by the Officer Procurement Service and gave invaluable assistance by providing printed material and publishing articles in the Physical Therapy Review.

The publication of newspaper and magazine articles featuring the value of physical therapy in the treatment and rehabilitation of patients returned from overseas with combat injuries, and accounts of experiences of physical therapists serving overseas, all contributed to this up-swing in interest. Then too, the circulation of the following publications assisted immeasurably: "An Opportunity for Physical Education Graduates," published by the United States Civil Service Commission in 1944; "Physical Therapists" (Bulletin 203, No. 1), published by the Women's Bureau, United States Department of Labor in 1944; "Physical Therapy—A Service and Career," published by the American Physical Therapy Association in 1945; and Occupation Abstract No. 80 entitled "Physical Therapy," published by the Occupational Index, Inc., New York University in 1945.

The change from the prewar educational requirement for appointment as a physical therapist from completion of four years of college to completion of two years of college (plus graduation from an approved physical therapy course) was viewed with much concern by some observers, as it was feared that

	Age					
Prerequisite Education	under 28	28-31	32-39	40-44	45 plus	Total
Physical Education Major	339	115	177	58	11	700
B.S. or A.B. Degree (specialty not listed)	86	42	53	13	2	196
Biology Major	37	14	18	6	2	77
Three years of college	39	4	3	1	0	47
Two years of college	68	7	10	7	1	93
Diploma from accredited School of Nursing	15	20	61	21	6	123
Irregular	42	10	17	8	3	80
Total	626	212	339	114	25	1316

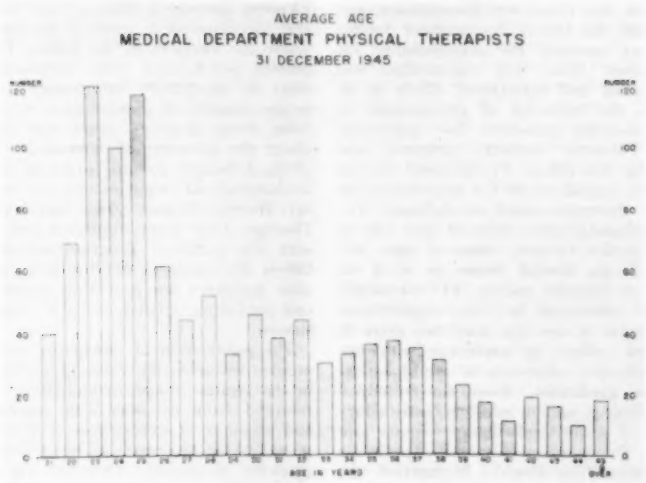


CHART A.

this change would result in a lowering of professional standards. The change in prerequisites was necessary, however, because it appeared that procurement needs for physical therapists could not be met by adhering to the peacetime requirement of completion of four years of college. It was then, and still is to be, interpreted only as a necessary wartime measure. The following study of records of physical therapists on duty in 1945 in reference to education completed prior to physical therapy training seems to indicate that this concern was not substantiated. This study revealed that seventy-seven percent of the officers appointed as physical therapists had completed three or more years of college prior to participation in a physical therapy training program.

The chart above depicting the ages of physical therapists on duty in December 1945 is also presented as a matter of interest. (See Chart A)

B. Distribution (Zone of Interior)

Since physical therapists as civilians had not been included in the Tables of Organization, there was no precedent or established ratio to serve as guide in assigning this personnel. A study of the distribution of physical therapists in hospitals of other federal agencies seemed to indicate that one for every hundred patients was an acceptable ratio. However, since the procurement of this personnel had not progressed as rapidly as had been anticipated, a restudy of availabilities necessitated a downward revision of this ratio. War Department Circular No. 99 dated April 10, 1943, established the ratio as one for every one hundred and fifty patients. Even with this change in the ratio, requisitions made on this basis could not be filled. Consequently, War Department Circular 306, dated November 22, 1943, reduced this ratio to one physical therapist for every two hundred and fifty patients. It should be understood that at no time was this distribution considered ideal or adequate, but it was a temporary measure to accomplish insofar as possible an equitable distribution of this scarce personnel. In the assignment of physical therapists, first consideration was always given to general hospitals designated as specialized treatment centers and to general hospitals conducting physical therapy training programs.

1. General Hospitals and Specialized Treatment Centers

With the return of the wounded from the European Theater of Operations, it was apparent that the distribution of physical thera-

pists as authorized in War Department Circular 306, would not suffice for those Army hospitals in the United States designated as specialized treatment centers. Accordingly in December 1944, the Director of Physical Therapists recommended that additional physical therapists be assigned to these hospitals in accordance with the following plan:

Neurosurgery	One additional physical therapist for every one hundred patients;
Amputees	One additional physical therapist for every two hundred patients;
Arthritis	One additional physical therapist for every two hundred patients.

As the physical therapy programs were expanded in these hospitals it was demonstrated that this distribution was inadequate to insure efficient physical therapy management of amputees and patients with peripheral nerve injuries. Accordingly, it was recommended for general hospitals, that physical therapists be assigned on the basis of one for every hundred patients up to one thousand, thereafter on the basis of one for every two hundred and fifty patients. In addition, it was recommended that one additional physical therapist be assigned for every fifty patients in the following categories: spinal cord injuries, arthritis, amputations, anterior poliomyelitis, and peripheral nerve injuries. This distribution was considered the minimum necessary to carry out the treatment programs as outlined in War Department Manual TM-8-293, "Physical Therapy for Lower Extremity Amputees," War Department Technical Bulletin TB Med. 193, "Poliomyelitis," directive from the office of The Surgeon General entitled "Electrical Stimulation in Peripheral Nerve Injuries," and Army Service Forces Circular No. 440 entitled "Convalescent Program for Patients with Spinal Cord Injuries."

2. Station and Regional Hospitals

Due to the extreme shortage of physical therapists, their assignment to Army station and regional hospitals could not be accomplished in accordance with existing tables, for it was considered that the services of this personnel were more essential in General Hospitals. War Department Circular No. 209, dated May 26, 1944, recommended that physical therapists be assigned to station hospitals on the basis of one for every two hundred and fifty patients. Experience showed that this distribution was not sufficient for station hospitals located on military installations where intensive troop training programs were being carried out.

3. Convalescent Hospitals

The marked increase in the number of casualties returned to the Zone of Interior hospitals late in December 1944, necessitated an increase in the number of convalescent hospitals in order to immediately provide hospital beds in general hospitals in sufficient numbers to accomodate this sudden influx of patients. It was also necessary to change the concept of the function of the convalescent hospital. Prior to this time, it had been understood that the function of the convalescent hospital in the Zone of Interior was to provide an interim period of hospitalization for those patients who no longer required definitive treatment, but who were not physically fit to return to full military duty. Under such circumstances, this phase of hospitalization might logically be expected to consist largely of reconditioning and rehabilitation activities and that physical therapy as such would play only a minor role. When it became necessary to transfer to convalescent hospitals patients other than those in these categories, a restudy of the function of physical therapy in this type of hospital appeared to be indicated. Since patients with peripheral nerve injuries and orthopedic conditions awaiting further surgery were often transferred to convalescent hospitals and since many of these patients required some form of physical therapy, it became necessary to enlarge the scope of physical therapy in convalescent hospitals, and to assign additional physical therapists. Because of the termination of the war, many of the physical therapy departments in these hospitals were in actual operation only a few months. There was not sufficient experience in this program, therefore, to determine whether or not the tentative plan for the distribution of physical therapists was adequate or satisfactory for this type of installation.

C. Physical Therapists in the Communication Zone

1. Assignment and Distribution

Prior to the Declaration of War in 1941, there were only four physical therapists serving overseas with the Medical Department of the Army. Three of these civilians were on duty in hospitals in Hawaii, and one was assigned to Sternberg General Hospital in Manila, Philippine Islands.

In June 1942, approximately six months after the Declaration of War, the number of physical therapists overseas had increased to eighteen assigned as follows:

5th General	Hospital, Ireland	...2
156th Station	Hospital, Hawaii	.. 1
148th General	Hospital, Hawaii	...1
204th General	Hospital, Hawaii	...1
142nd General	Hospital, Australia	.1
42nd General	Hospital, Australia	.2
105th General	Hospital, Australia	.3
118th General	Hospital, Australia	.2
171st Station	Hospital, Australia	.1
13th Station	Hospital, Australia	.1

On December 22, 1942, there were forty-four physical therapists overseas, many of whom were assigned to affiliated hospital units which had been activated in civilian installations in 1941, in anticipation of a possible emergency.

A directive published by the office of The Surgeon General of the Army on March 23, 1942, provided that qualified female physical therapists in the following categories were eligible for assignment to hospital units designated for overseas service:

a. Civilians employed in Army hospitals;
b. Civilians employed in other federal hospitals;
c. Individuals who had passed an appropriate civil service examination;
d. Individuals who had enrolled with the American Red Cross for employment with the Medical Department of the Army;
e. Individuals who had been professionally associated with the personnel of an affiliated unit, or with the organization sponsoring the unit.

This directive also established the ratio for the assignment of physical therapists in overseas units. It was soon apparent that these specialists were not available in sufficient numbers to comply with this directive. The demand for this personnel for overseas hospital units as well as for fixed installations in the Zone of Interior being far in excess of availabilities, these personnel authorizations were rarely filled. Accordingly on June 23, 1942, a revised directive was published which decreased the number of physical therapists for these hospitals.

Even with the decreased authorizations, because of delayed procurement, it was impossible to assign personnel in accordance with existing directives. It became necessary, therefore, to recommend a further change in the Tables of Distribution which was approved in December 1943. Although it was not published until July 1944, this final revision was the basis for the assignment of physical therapists during the remainder of World War II.

The following tabulation indicates the downward revision of the ratio used as a guide in the assignment of physical therapists overseas:

	March 1942 Physical Therapists	*December 1943 Physical Therapists*
1000 Bed General Hospital	4	2
750 Bed Station Hospital	3	1
500 Bed Station Hospital	2	1
250 Bed Station Hospital	1	0

It should be pointed out that the ratio ultimately utilized in the assignment of this personnel overseas was at no time considered adequate, but that it was resorted to as the only means by which an equitable distribution of this personnel could be insured.

The early inclusion of physical therapists in the Tables of Distribution for overseas hospitals is of interest, for it will be recalled that when a military status for these employees was under consideration early in 1941, it had been stated that the service of this personnel would not be required overseas in the event of an emergency. It had been envisioned by some, that patients requiring extensive physical therapy would be returned to general hospitals in the Zone of Interior, and therefore it would not be necessary to assign physical therapists overseas. In actual practice, however, it was demonstrated again and again that such services were essential to the efficient operation of large hospital units overseas. Requisitions for physical therapists for overseas hospitals were given top priority, and only a few hospitals units left the country without this personnel assigned.

In May 1943, it was recommended that the Tables of Organization for hospital ships be revised to provide for the assignment of physical therapists. Accordingly, two physical therapists were assigned to the Acadia, the first Army hospital ship activated. When the Acadia returned to the United States with her first complement of war casualties, The Surgeon General and a group of medical officers, present to evaluate the efficiency of the operational procedures pertaining to the transfer of patients from ship to shore installations, ascertained that the effectiveness of physical therapy procedures on board ship was questionable, and that such activities were exceedingly limited in their scope due to the movement of the ship

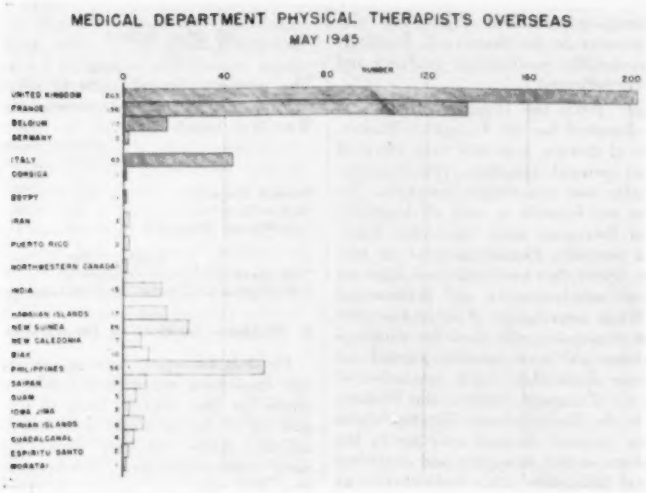


CHART B.

and to inadequate space. In view of the acute shortage of physical therapists, it appeared that the services of this personnel could be utilized to better advantage if they were otherwise assigned. As a result, only three physical therapists actually served on Army hospital ships, and those only for short periods of time.

A few general hospital units embarked for overseas without physical therapists, but by the time the unit was ready to function, it was usually provided with this personnel. This was not always the case, however, and in a few instances, it was necessary for the hospitals to employ local physical therapists. Later in the course of the war, groups of physical therapists were sent overseas as replacements for assignment to units which had embarked without the authorized quota of this personnel, or to those units which had suffered losses through normal attrition. Approximately two hundred and four replacements comprising thirty-nine shipments left the United States between August 1943 and May 1946, distributed as follows:

Antilles Department	2
European Theater	68
India-Burma Theater	19
Mediterranean Theater	8
Pacific Theater	106
Persian Gulf Command	1
Total	204

Upon arrival in the overseas theaters, these casuals were attached to Replacement Depots, where they remained until reassignment orders were published. Unfortunately, it sometimes happened that these orders were delayed and the period of enforced inactivity resulted in lowered morale and keen disappointment, for the physical therapists, aware of the acute need for their services, had arrived overseas eager to begin work at once. Unfortunately too, the most judicious reassignment of this personnel was not always accomplished.

The problem of assignment and reassignment of physical therapists in accordance with the needs of the service was but one of the many reasons for the opinion that the best utilization of this personnel could not be accomplished unless a physical therapist were assigned in a supervisory capacity in the office of The Surgeon of each theater. Furthermore, it was thought the efficiency and morale of this personnel would be greatly benefited by such supervision. No one recognized the need for such supervision more than the Director of Physical Therapists, who had frequently recommended the establishment of such a position, and who had envisioned the duties inherent to this position to consist of the following: 1. Advise on the assignment and reassignment of physical therapists; 2. Acquaint newly arrived

physical therapists with their duties, and with problems peculiar to the theater; 3. Facilitate promotions; 4. Offer professional guidance and instruction as indicated.

In January 1945, the Director of Physical Therapists departed for the European Theater, where physical therapy activities were observed in forty-four general hospitals, two convalescent hospitals, and two station hospitals. Because it was not feasible to visit all hospitals, the physical therapists were sometimes transported to a centrally located hospital or hospital center, where they met with their Director and discussed administrative and professional problems. While interchange of ideas was most helpful and stimulating, the need for direction and supervision was most forcibly pointed out in all of these discussions. Upon conclusion of the trip in the European Theater, the Director proceeded to the Mediterranean Theater, where she observed physical therapy activities in ten general and ten station hospitals, and conferred with physical therapists either individually or in groups.

Following this inspection trip, the Director of Physical Therapists again pointed out the acute need for supervision and direction of this personnel overseas. The position was finally authorized, and in April 1945, Captain Jean Beatty was assigned as the first supervising physical therapist in the office of The Surgeon, European Theater of Operations. Later in the year, Captain Emma T. Harr (now a Major) was assigned in a similar capacity in the office of The Surgeon, of the Middle Pacific Theater, and Captain Edna Lura (now Lt. Col. Retired) was assigned to the office of The Surgeon in the Far East Command. Later these positions were more than justified when the many problems associated with demobilization were encountered.

During World War II, physical therapists served in hospital units in every theater of operations. By June 1946, six hundred and eighty-one physical therapists had seen overseas duty, and the largest number on duty overseas at any one time was five hundred and seventy (See Chart B). The original assignment of these officers to the various theaters tabulated on March 1, 1946 was as follows:

European Theater	349
Pacific Theater	199
Mediterranean Theater	68
All other theaters	28
Total	644

The total number of units to which physical therapists were assigned overseas during World War II is listed below:

	ETO* MTO†	Pacific theaters	All other theaters
General Hospitals	157	54	8
Station Hospitals	59	39	3
Convalescent Hospitals	4	1	0
Total	220	94	11

* European Theater of Operations
† Mediterranean Theater of Operations

2. Problems Incident to the Civilian Status

Physical therapists serving overseas as civilian employees encountered many trying situations for they enjoyed none of the protection and few of the privileges accorded those having military status, yet they were subject to the same risks and hazards. Furthermore, as civilians they were not entitled to the benefits of National Life Insurance which were available to those with military status. One of the most difficult problems encountered overseas in 1942 was that of clothing, for it will be recalled that at that time a uniform for civilian dietitians and physical therapists had not yet been authorized. The first civilians in these categories who left the United States with overseas units wore civilian clothing, not readily adaptable for wear with life preservers, musette bags, gas masks, and other sundry equipment. A street uniform was finally authorized in June 1942, but its procurement overseas was difficult. One of the many benefits incident to the military status particularly appreciated by physical therapists overseas was the termination of the uniform problem. Subsequent to the passage of Public Law 828, street and hospital uniforms were the same for all female officers of the Medical Department, and these and other items of clothing were therefore available for issue or purchase in the various theaters.

3. Preparation of Physical Therapy Departments

The physical therapy departments overseas were as varied in space and arrangement as the hospitals of which they were a part. Those located in buildings originally designed as hospitals or in the familiar temporary cantonment type of structure possessed few characteristics to distinguish them from physical therapy de-

partments in Army hospitals in the United States. However, when the hospitals were established in school buildings, warehouses, apartment houses, hotels, churches, or military barracks, physical therapists, like all other hospital personnel, encountered many problems which required considerable resourcefulness to meet. Since labor for the construction and repair of necessary equipment and for minor alterations often was not available, it was not unusual for the physical therapist to utilize tools which she had procured locally or brought with her from the United States in her personal luggage. As one physical therapist so aptly stated, "I have been an amateur painter, electrician, carpenter, and even at times, a plumber."

Although many times furniture was not obtainable or in scarce supply, the physical therapy departments usually were cheerful and attractive places, reflecting the originality of the personnel assigned. Flowers and small plants, if available at all, could be found in the physical therapy department, lending a homelike atmosphere which was appreciated by both patients and personnel.

The type and dependability of electrical current always was a matter for consideration in planning a physical therapy department. Sometimes it was necessary to utilize transformers to convert the current to the type required for the standard Medical Department equipment. In some areas where the local current was not dependable or in short supply and transformers were not available, the use of electrical equipment was precluded altogether.

Another problem encountered was the lack of a steady and adequate supply of hot water for the operation of the whirlpool baths, and it was the exception rather than the rule that there was sufficient hot water available for this purpose. Sometimes, small coal or oil-burning hot water heaters were used, and as an emergency measure, water was heated at times on field ranges and carried to the physical therapy department.

The physical therapy equipment for overseas hospitals as listed in the Army Service Forces Catalog consisted only of standard items which were considered essential for the efficient operation of physical therapy activities in these hospitals. Due to changing conditions in shipping priorities and procurement, the list was revised several times during the war. The items listed in this table rarely were available in the numbers indicated, and the usual distribution of this equipment was as follows:

	General Hospitals	Station Hospitals
Baker, Electric, Portable	6	4
Lamp, Infra-red Small Element Type	4	2
Lamp, Mercury Arc, Air Cooled	1	1
Sinusoidal Machine, Portable	1	1
Spectacles, Ultra-Violet, Protective	6	2
Whirlpool Bath, Arm	1	1
Whirlpool Bath, Leg	1	1

It will be noted that this list did not include any exercise equipment. This was left to the ingenuity of the physical therapist, who not only planned the department but improvised equipment as well. The records contain many interesting photographs of original and ingenious devices improvised for use in therapeutic exercise, the designs for which were made by the physical therapist and constructed with the assistance of the hospital utilities section and enlisted personnel assigned in the physical therapy department. The materials for these improvisations were obtained in devious ways, some even rescued from trash heaps or junk piles. There were stationary bicycles and rowing machines of all types, some made entirely of wood; shoulder wheels made from wagon wheels; wrist rollers made from discarded baseball bats; ankle exercisers made from old upholstery springs with a wooden shoe attached; and wands made from broom or mop handles or the branches of a tree. Space does not permit a detailed description of all the improvisations, but the photographs of these items, crude as they were sometimes, are a monument to the resourcefulness and ingenuity of many a physical therapist and her enlisted assistants. There can be no doubt that such activities afforded the "inventors" a keen sense of accomplishment.

4. Organization and Operation of Departments

a. Organization

In hospital units hurriedly assembled at the Ports of Embarkation immediately after the Declaration of War, time was at a premium, and usually was utilized in activities which were essential in the preparation of a unit for overseas duty, such as completing inoculations, obtaining identification tags, attending gas mask drills, and orientation lectures, to mention only a few. Under such circumstances, it was impossible to devote any time to the organization of the physical therapy department, which of

necessity was delayed until the unit had arrived at its destination.

On the other hand, in many hospitals some unit organization was accomplished during the activation period. This usually consisted of the designation of the officer who was to direct physical therapy activities, and the assignment of enlisted personnel. In cases where the physical therapist did not join the unit until it had arrived at the embarkation point, little attention was devoted to departmental plans or organization.

The most effective type of preparation and training was that accomplished when hospital units were attached to fixed Army hospitals in the United States, and parallel training was carried on in the various hospital departments. This program provided an opportunity for the medical officer in charge of physical therapy activities to become familiar with his personnel, to insure that enlisted men assigned were adequately trained, and to effect organizational plans and policies.

b. Operation

The physical therapy department in these units functioned as a section of the Surgical Service, with the Chief of the Orthopedic Section usually designated as Chief of the Physical Therapy Department in addition to his other duties. In actual practice the responsibility of administering the physical therapy department usually was redelegated to the senior physical therapist. She supervised the activities of other physical therapists assigned, trained and directed the enlisted personnel, established and maintained a record system, and cooperated closely with the ward officers, reporting on the progress of patients undergoing treatment under her supervision. In many hospitals, it was an established policy that the senior physical therapist participate in ward rounds at least once a week, at which time the patients receiving physical therapy were examined, results of previous treatment evaluated, and changes for future treatment outlined. Since there was no uniformity in the procedure for counting patients or treatments, there is no reliable statistical data available which would numerically indicate the work load accomplished in physical therapy departments overseas.

5. Enlisted Personnel

The history of physical therapists overseas would not be complete without a tribute to the enlisted men of the Medical Department who served with them. The shortage of physical therapists was felt most acutely in general hospitals, where it was a physical impossibility for two or three physical therapists to accomplish the volume of work referred to them. With the steadily increasing work load, it was apparent that many of the nonprofessional duties which had formerly been considered the responsibility of the physical therapist should be delegated to enlisted personnel. Additional responsibilities could not be undertaken by these men, however, without first providing them with some form of training, which usually was "on-the-job" instruction.

When feasible, formal instruction was afforded this personnel as was done in Hawaii. There each hospital was directed to select enlisted men to attend one of such courses offered at Tripler General Hospital, North Sector General Hospital, or at the 147th General Hospital. These programs of four weeks' duration consisted of formal basic instruction and the clinical application of simple routine procedures. While the enlisted men who completed these courses did not replace physical therapists, they were qualified to render invaluable assistance and to assume many of the nonprofessional duties.

Since the Tables of Organization for overseas hospitals made no provision for the inclusion of enlisted physical therapy technicians, it was exceedingly difficult to obtain ratings for these men comparable with their duties and responsibilities. As a result, proper recognition of their contribution frequently was not accomplished. It was the opinion of many physical therapists overseas that the physical therapy program could not have been accomplished without the loyalty and assistance of the enlisted men serving with them. It is gratifying to note that the revised authorizations now provide for an allotment of spaces and grades for this personnel in Army hospitals both in this country and overseas.

Training

1. After World War I

Many of the physical therapists who served with the Medical Department of the Army during World War I were on extended leave of absence from civilian positions in hospitals or educational installations. Due to the large number of patients requiring hospitalization, partic-

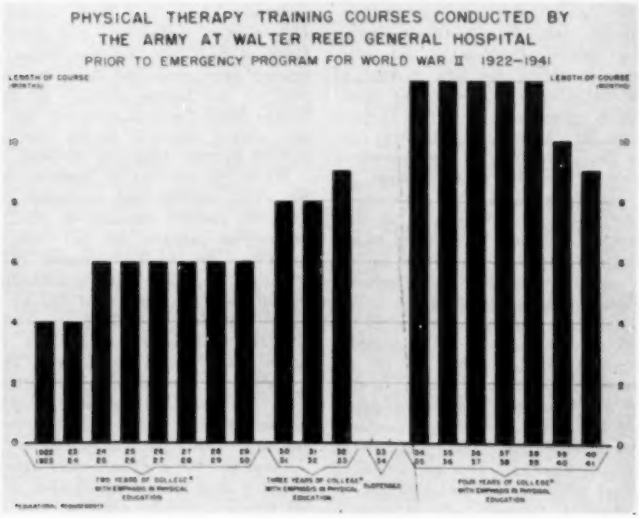

PHYSICAL THERAPY TRAINING COURSES CONDUCTED BY
THE ARMY AT WALTER REED GENERAL HOSPITAL
PRIOR TO EMERGENCY PROGRAM FOR WORLD WAR II 1922–1941
LENGTH OF COURSE (MONTHS)
10
8
6
4
2
0
1922 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
TWO YEARS OF COLLEGE* WITH EMPHASIS IN PHYSICAL EDUCATION
THREE YEARS OF COLLEGE* WITH EMPHASIS IN PHYSICAL EDUCATION
SUSPENDED
FOUR YEARS OF COLLEGE* WITH EMPHASIS IN PHYSICAL EDUCATION

CHART C.

ularly in the orthopedic categories, the demobilization of physical therapists subsequent to the Armistice could not be accomplished rapidly. In 1920, however, the separation of this personnel was accelerated to such an extent that late in 1921, the Medical Department was faced with an acute shortage of women trained in this field. The Surgeon General was greatly concerned over the rapid reduction in the number of physical therapists and the fact that replacements were not available from civilian sources. Since there were no physical therapy courses in the United States at that time, it was recommended that the Medical Department initiate such a training program in order to provide a source for this much needed personnel. This plan was concurred in, and the first postwar physical therapy course to be established in the country began at Walter Reed General Hospital, Washington, D. C., in 1922. Thereafter, courses were conducted annually at this hospital with the exception of the year 1933-1934, when this training program as well as certain other activities in this hospital were markedly curtailed due to the provisions of the National Economy Act.

Experience with the training program during these years, as well as an increase in the responsibilities of the physical therapist which accompanied the expansion of the field of physical therapy, resulted in lengthening the course, broadening the scope of the curriculum, and raising the educational prerequisites for entrance. The course was lengthened from four to twelve months; the educational prerequisites were raised from completion of two years of college to four years of college, both with emphasis in physical education (See Chart C).

In 1928, when the American Physical Therapy Association assumed the function of a professional accrediting agency, the Medical Department's physical therapy course was among the first to be accredited. In 1936, when the Council on Medical Education and Hospitals of the American Medical Association was designated as the official accrediting agency for physical therapy courses, this course was likewise accredited.

2. Expansion of Medical Department Physical Therapy Training Program

a. Emergency Courses (civilian students)

With the passage of the National Service Act of 1940, attention was turned toward

expanding the Army's physical therapy training program to meet the rapidly increasing needs of the Medical Department. An accelerated course providing for six months of didactic instruction and six months of applicatory training proposed by The Surgeon General of the Army early in 1941, was concurred in by the Council on Medical Education and Hospitals of the American Medical Association. This organization also approved a plan whereby similar emergency physical therapy courses conducted in civilian educational institutions would be followed by six months of supervised applicatory experience in Army hospitals. For this purpose, the United States Civil Service Commission authorized the training positions of student and apprentice physical therapist, and provided for the reallocation from the position of student to that of apprentice and ultimately to that of physical therapist without prior approval or examination by the Commission. The position of student physical therapist was an ungraded position (salary $120 per annum) and that of apprentice physical therapist was designated SP-3 (salary $1,440 per annum), both subject to current deductions for retirement, quarters, and subsistence. After deductions were made, students received a cash salary of approximately $5.00 per month, and were required to furnish textbooks, uniforms, and all incidental items.

On July 1, 1941, the first emergency course in physical therapy conducted by the Medical Department of the Army was initiated at Walter Reed General Hospital, Washington, D. C., with an authorization for ten students and provisions for the enrollment of concurrent classes at quarterly intervals.

A comparison of the curricula of the regular and emergency courses shows a decrease in the number of hours of instruction in the allied subjects in the emergency course, with more emphasis on certain subjects considered essential to this specialty in Army hospitals. Both courses provided for actual experience under close supervision in the treatment of patients.

The expansion of the training program continued with the establishment of four additional emergency physical therapy courses at the following hospitals in October 1942: O'Reilly General Hospital, Springfield, Missouri; Fitzsimons General Hospital, Denver, Colorado; Army and Navy General Hospital, Hot Spings, Arkansas; and Brooke General Hospital, Fort Sam Houston, Texas. Since these courses were conducted along the same general plan as the course already in operation at Walter Reed General Hospital, the curriculum was almost identical to the one already approved by the American Medical Association.

While the number of students enrolled for the 1943 courses had increased considerably over the number enrolled in 1942, the newly established courses did not operate at full capacity. Due to procurement difficulties, it was soon apparent that the authorized capacities of these courses could not be maintained by the selection of students from certificates of eligible applicants compiled by the United States Civil Service Commission. This was believed to be due to the many attractive positions then available in other branches of the military service and in civilian life to college graduates with a physical education background.

Demands for woman power were definitely reflected in a decreasing number of applicants for physical therapy training. The program of applicatory (apprentice) training conducted by the Medical Department for students completing the didactic portion of the emergency courses in approved civilian schools, likewise had not developed as rapidly as had been anticipated when the program was first envisioned. While fifteen civilian institutions conducted emergency courses, the attendance in all of these schools was far below established quotas, except in those where training was tuition free.

Due to an intensive recruitment program early in 1944, there appeared to be an increased interest in courses offered by the Medical Department to civilian students. While there were only enough eligible civilian applicants to fill one class of trainees in January of that year, the number of names of certified applicants received from the United States Civil Service Commission in the succeeding months indicated that consideration should be given to further expansion of the program. Consequently on August 10, 1944, two additional courses were established for civilian students, one at Bushnell General Hospital, Brigham City, Utah, and the other at Ashford General Hospital, White Sulphur Springs, West Virginia.

Previous to this time the educational prerequisite of college graduation with major emphasis in physical education was maintained

by the Medical Department as one of the requirements for selection to participate in this program. In 1944, it was recommended that the educational prerequisites be changed to include graduation from an approved college with emphasis in either the biological sciences or physical education. While the recommended revision was not published by the United States Civil Service Commission, it was informally approved by that office and civilian students selected subsequent to August 1944 were evaluated on this basis.

Civilian students enrolled for these courses were also required to meet the physical standards for commission as a physical therapist on the basis of a final type physical examination performed by Army medical officers not more than three months prior to enrollment. This procedure was initiated in an effort to reduce attrition among trainees because of later failure to meet the physical requirements for commission as a physical therapist.

In October 1944, the training program for civilian students was given an additional impetus by the reclassification of the positions of student and apprentice physical therapist. The ungraded position of student physical therapist (salary $420 per annum) was upgraded to SP-3 (salary $1,440 per annum), minus current deductions for quarters, subsistence, and retirement. The position of apprentice physical therapist, SP-3 (salary $1,440 per annum), was upgraded to SP-4 (salary $1,620 per annum) minus current deductions.

b. Emergency Courses (enlisted students)

In July and August 1943, conferences were held in the office of The Surgeon General for the purpose of discussing the desirability of making the Medical Department physical therapy courses available to enlisted members of the Women's Army Corps. It was envisioned that such a program would not only assist in meeting the urgent requirement for physical therapists, but it would also offer an educational opportunity to enlisted members of that Corps. The proposed plan which outlined standard procedures for the selection and training of qualified enlisted women as physical therapists was approved on August 22, 1943.

The educational prerequisite approved for this program represented the first departure from the established criterion of college graduation with major study in physical education which had been applied in the selection of students for previous physical therapy courses conducted by the Medical Department. The selection of enlisted students was made on the basis of completion of the current minimum educational prerequisites for physical therapy courses as recommended by the Council on Medical Education and Hospitals of the American Medical Association. This current requirement necessitated the completion of not less than two years of college (sixty semester hours) including satisfactory courses in biology and allied science. It should be pointed out here, however, that a study made in 1944 of educational qualifications of all enlisted students trained in this program revealed that the average number of years of college preparation for this group was three and sixty-two hundredths years.

In order to supply physical therapists as soon as possible for the rapidly expanding needs of the Medical Department, the total length of the composite training period (student and apprentice phases) for enlisted students was reduced from twelve to nine months by shortening the applicatory or apprentice phase of the training from six to three months. In view of the previous military orientation of these enlisted women, and the vast amount and variety of clinical material in Army general hospitals then available for study, observation and practice, this shorter period of practice, while not ideal, was satisfactory and contributed materially to the procurement of physical therapists. A study of the statistics concerning the hours of clinical practice afforded enlisted students in the applicatory or apprentice phase of their training revealed that the average number of hours of this practice was far in excess of the minimum of four hundred hours recommended at that time by the Council on Medical Education and Hospitals for approved schools of physical therapy.

The entire plan was most enthusiastically received by the Women's Army Corps, and late in 1943, it was obvious that the existing training courses already established in Army hospitals could not be immediately expanded to a sufficient degree to provide for the training of enlisted members of the Women's Army Corps. Accordingly, negotiations were initiated by The Surgeon General by which certain civilian installations were authorized to conduct such training under contract and direction of the Medical Department of the Army. The installations selected to undertake this

training were Stanford University, Palo Alto, California; the University of Wisconsin, Madison, Wisconsin; and the D. T. Watson School of Physical Therapy, Leetsdale, Pennsylvania. Under the terms of these contracts, the War Department paid the installation for the student's tuition, board and room, and provided textbooks and teaching aids. These courses continued in operation until October 1944, at which time the physical therapy training facilities made available at Percy Jones General Hospital, Battle Creek, Michigan, and Lawson General Hospital, Atlanta, Georgia, together with existing training facilities, were sufficient to accommodate the increasing number of enlisted women desirous of participating in this program.

After the initiation of this training program for enlisted women, it was conceived that there might be qualified young women desirous of enlisting in the Women's Army Corps for the specific purpose of attending Medical Department physical therapy courses, provided that eligibility and assurance of selection could be determined prior to enlistment and execution of the Oath of Office. A recommendation for such a program was approved, and on December 14, 1943, The Adjutant General of the Army authorized the recruitment of qualified women for the Women's Army Corps for the sole purpose of participating in this program, with the assurance of later commission as a physical therapist upon the satisfactory completion of the course, if physically and otherwise qualified at that time. After this directive became effective, the number of enlisted women recruited for this training program comprised approximately sixty-three percent of the total enlisted enrollment.

In July 1944, the directive providing the authority for the recruitment of qualified enlisted women for physical therapy training was revised to authorize the reduction of the maximum age from forty-four to thirty-seven years, the same as for civilian students. This change was recommended as a result of a study which revealed that trainees in the upper age groups often experienced considerable difficulty in adjusting to intensive academic study which was necessary in such a concentrated program. Furthermore, personal readjustments for older women living and working in close association with groups of much younger women were often difficult.

A survey made subsequent to VE-Day indicated that there were sufficient numbers of selected civilian and enlisted trainees in addition to those already enrolled in Medical Department training courses to meet the projected needs for physical therapists. Accordingly, directives which authorized the recruitment and training of enlisted women were rescinded on July 2, 1945, and the Commanding Officers of hospitals conducting such programs were advised that all Army physical therapy training programs would be terminated upon completion of the courses then in progress.

c. The Apprentice Training Program

The program of applicatory (apprentice) physical therapy training established in May 1941 for graduates of emergency physical therapy courses conducted in civilian schools developed very slowly.

Experience in this program clearly demonstrated that in order to train physical therapists for the treatment of patients with combat injuries, clinical practice should be afforded in hospitals treating such patients. The limited clinical practice available in station hospitals proved to be unsatisfactory for the proper training of physical therapists for this purpose. It was also demonstrated that the effectiveness of this program was dependent not only on the availability of a varied clinical experience, but that the success of the program was directly related to the amount and quality of supervision exercised by physical therapists (See Chart D).

This applicatory phase of the training program consisted primarily of supervised practice in the treatment of patients both in the physical therapy section and on the hospital wards. Particular emphasis was given to the treatment of patients with combat injuries, including amputations, peripheral nerve injuries, injuries of the brain and spinal cord, chest and vascular injuries, and other conditions. This program included at least one hour daily of round-table discussion of professional subjects as well as a period for the reading and discussion of current medical literature applicable to the specialty. Instruction was also offered in the maintenance of records, and the preparation of progress notes, reports and requisitions.

d. Evaluation of the Medical Department's Emergency Therapy Training Program

With this unprecedented expansion of the

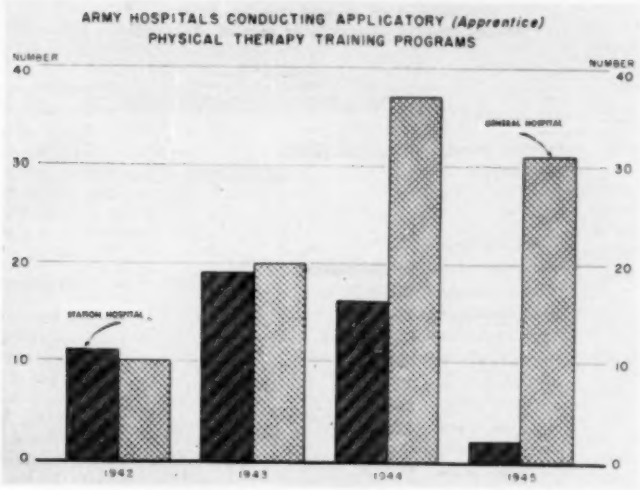


CHART D.

physical therapy training program, continuous effort was made to maintain high educational and professional standards. As new courses were established, applications for early inspection were made to the Council on Medical Education and Hospitals of the Americal Medical Association. It is of interest to note that all of these emergency courses were approved by that body following the completion of the first course.

The procurement of qualified physical therapists in sufficient numbers to meet the urgent needs of the Army could not have been accomplished without the emergency physical therapy training program. Even though the instruction in these courses was streamlined and greatly intensified, at no time were the high professional standards which have always characterized physical therapy activities in Army hospitals sacrificed.

The outstanding contribution of many of the graduates of the Medical Department's emergency physical therapy courses in Army hospitals both in this country and overseas demonstrated the effectiveness of this program as an efficient and expedient wartime training measure. The effectiveness of this program has also been attested to in the outstanding manner in which many of these graduates have distinguished themselves in civilian fields of endeavor after separation from the military service.

Of the total number of 1,633 physical therapists appointed in the Army during World War II, approximately 1,000 were graduates of the Medical Department's physical therapy courses, as demonstrated in Chart E.

In evaluating this program, reference is made to an article published in the *Archives of Physical Medicine*, August 1945, Vol. XXVI, No. 8, "Analysis of the Emergency Physical Therapy Training Program," by Dr. F. A. Hellenbrandt, then Medical Director, Baruch Center of Physical Medicine, Richmond, Virginia. In this article, Dr. Hellebrandt presented a detailed analysis of the Army's emergency physical therapy training program. The following observation by Dr. Hellebrandt, who served as the Medical Director of the physical therapy course conducted under contract at the University of Wisconsin from October 1943 to October 1944, are quoted from this article: "Much has been said about the 'lowering of standards' inherent in the accelerated emergency training program, especially that administered by the Army. Careful study of the scope and

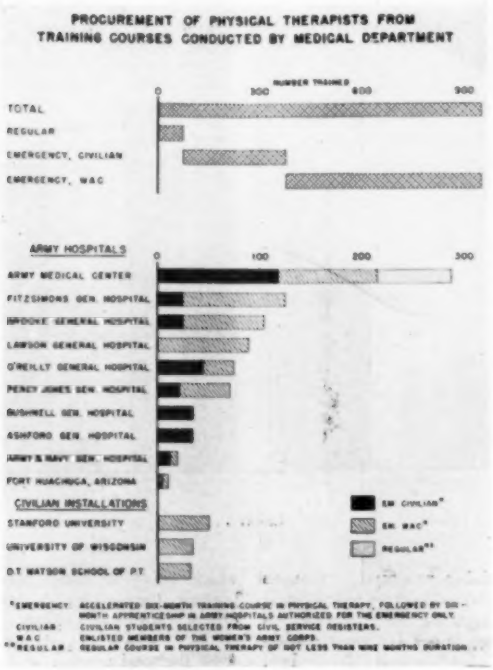


CHART E.

content of this course suggests that in reality, it surpasses anything previously attempted by the average apprentice-type of approved hospital training. As a result of this well-balanced didactic program, a variety of clinical material, close and excellent supervision afforded by the Director of Physical Therapists, SGO, and the unparalleled opportunities for study in the Medical Corps, trainees enrolled in these courses may be expected to contribute in full measure to the advancement of the field during their postwar professional careers."

3. Training of Enlisted Physical Therapy Technicians

The Medical Department had long recognized the existing need for the utilization of trained nonprofessional personnel in the operation of a physical therapy department. Under supervision, this personnel assisted in the administration of hydrotherapy and thermotherapy procedures, and performed various nonprofessional duties. Prior to May 1945, the training of these enlisted assistants had been conducted entirely as an "on-the-job" activity.

Early in 1945, it appeared advisable to formulate a more efficient training program for this personnel and, as a result, a formal program of instruction for theoretical and applicatory training of physical therapy technicians was approved in April 1945. This program consisted of a four weeks' course in theory and practice in selected physical therapy procedures, as well as a general orientation to this specialty. Prior to enrollment in these courses, applicants were required to have completed two months of didactic training in a Medical Department Enlisted Technicians School for Medical and Surgical Technicians.

Courses for enlisted members of the Wom-

en's Army Corps conducted under the supervision of the office of The Surgeon General were established in thirteen selected general hospitals in order to prepare this personnel for hospital assignments as rapidly as possible.

The utilization of approximately five hundred enlisted women trained in this program contributed materially in the successful operation of physical therapy activities under excessive patient loads, and enabled commissioned physical therapists to devote the major portion of their time to professional duties.

PRESENT STATUS OF PHYSICAL THERAPISTS IN THE ARMY

Since the termination of World War II, there has been another change in the status of physical therapists in the Army, for now they may be officers in the Regular Army. This was made possible by the passage of Public Law 36, signed by the President on April 16, 1947. This law authorized the establishment in the Regular Army of a Women's Medical Specialist Corps, to consist of three sections—a Dietitian Section, a Physical Therapist Section, and an Occupational Therapist Section. The Chief of the Corps holds the temporary grade of colonel while so serving, and the Chief of each of the three sections holds the temporary grade of lieutenant colonel while so serving.

According to Public Law 36, original appointment in the Women's Medical Specialist Corps in the Regular Army is made only in the grade of second lieutenant. Such appointments are available to professionally and physically qualified unmarried women who have not attained the age of twenty-eight years. Promotion of officers in this Corps to the higher grades is made the same as for all other officers in the Regular Army, except that Public Law 36 specifically states that the highest permanent grade which an officer in this Corps may achieve is that of major.

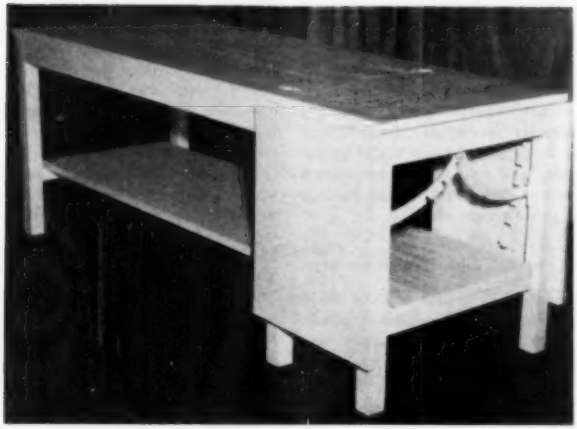
The passage of this law also made it possible for members of these three groups for the first time to be members of the Officers' Reserve Corps. The grade in which an officer of this Corps may be appointed in the Officers' Reserve Corps is determined by her age, education, and professional experience as defined in Army regulations governing such appointments. Whether in the regular or reserve status, officers appointed in the Women's Medical Specialist Corps enjoy all the rights and privileges accorded to all other officers of comparable grade in the Army.

The authorization of a permanent military status for these three groups represents another milestone in their development and culminates the achievement of military recognition which has been the aspiration of the writer ever since World War I.

In conclusion, I would like to pay a tribute to all physical therapists who served with the Medical Department of the Army during World War II. Had it not been for the outstanding contribution made by dietitians, physical therapists, and occupational therapists in the care and rehabilitation of the sick and wounded during World War II, it is doubtful if the permanent military status for these groups would have been achieved. It will be recalled that in support of legislation to authorize such a status for these groups, Major General Norman T. Kirk, then The Surgeon General of the Army, stated that these groups had earned the right to become a permanent part of the military medical team.

Physical therapists who served with the Medical Department of the Army during World War II may take pride in the fact that they were members of the largest group of physical therapists ever assembled in one military organization in this country, and probably the world. They may also be proud of the emergency physical therapy training program conducted by the Medical Department of the Army during the war, which was the most extensive such program ever undertaken by one organization.

Physical therapists, whether now in the Army or in civilian activities, cannot rest on the laurels of past achievements, for they too are writing a page in history.



Modified Physical Therapy Plinth

Meet Our New Contributors

Isaacs, Arnold J., Assistant Chief Physical Therapist, Brentwood Hospital, Veterans Administration Center, Los Angeles, was physical therapy technician in the Navy during World War II, serving from 1942-1946.

After leaving the service, Mr. Isaacs entered the University of Southern California where he received his B.S. degree in physical therapy.

Mr. Isaacs is a member of the American Registry of Physical Therapists, and as a member of the American Physical Therapy Association, is active on the Committee on Public Relations of the Southern California Chapter.

Jampol, Hyman, Assistant Engineer, Artificial Limbs Research, University of California at Los Angeles, was graduated in 1946 with a B.S. degree from the University of California at Los Angeles.

In 1948, Mr. Jampol enrolled at Stanford University for his physical therapy training, and while studying under a scholarship from the National Foundation for Infantile Paralysis, received his certificate in physical therapy and his master's degree.

Prior to accepting his present position, Mr. Jampol was physical therapist at the San Francisco Rehabilitation Center. He is a member of the American Registry of Physical Therapists and of the American Physical Therapy Association.

Kennon, Capt. Helen, Officer-in-Charge of Physical Therapy, Keesler Air Force Base, attended Southwestern Louisiana Institute, the University of Alabama, and Louisiana State University, where she was graduated with a B.A. degree.

In 1944 she entered military service, and received her physical therapy training at Lawson and Dibble General Hospitals, earning her physical therapy certificate in 1946.

Captain Kennon has served as Chief Physical Therapist in Japan at the 361st Station Hospital in Tokyo, at Johnson Air Force Base, and at the Air Force Base Hospital in Nagoya.

Captain Kennon is a member of the American Physical Therapy Association.

*Suggestions from the Field**

Modified Physical Therapy Plinth

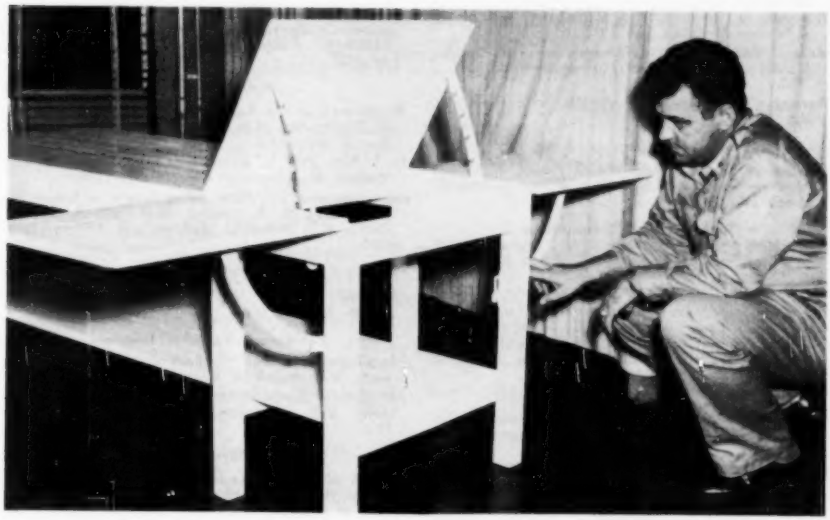
Capt. Helen Kennon, USAF, WMSC

With the emergency in Korea and increase in patient load, the demand for plinth and table facilities for treatment purposes increased correspondingly in the physical therapy clinics in the Pacific theater. It was necessary to accommodate this additional workload within the same amount of clinic floor space. The author and Major Frederick Ehart, USAF (MC), then stationed with the Air Force Hospital at Nagoya, Japan, collaborated in designing and constructing the space-saving plinth below. Permission for construction was provided by the Far East Air Forces.

Noteworthy features of the plinth are: elevation of head or foot to any desired height; side extensions of ample size and stability for treatment of arms or legs; side extensions for use in lieu of tables for treatment of upper extremity; and a lower shelf providing ample room for linen and bottle storage. The regularly issued quartermaster cotton mattress can be used on the plinth when desirable.

Physical Therapist, Keesler Air Force Base, Biloxi, Miss.

*Physical therapists who have developed or adapted equipment to meet individual patient needs are encouraged to share their ideas through the *Physical Therapy Review*.



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(continued on page 588)

Reprints Available

THE FOLLOWING INFORMATIONAL MATERIAL AND ARTICLES ON PHYSICAL THERAPY ARE AVAILABLE WITHOUT CHARGE:

Available to chapters, interested individuals and prospective students by single copies or in reasonable quantities:

PHYSICAL THERAPY—IS THIS THE DOOR TO YOUR FUTURE?—
An illustrated brochure describing the opportunities for a career in physical therapy.

APPROVED SCHOOLS OF PHYSICAL THERAPY—
A list of schools approved by the Council on Medical Education and Hospitals of the American Medical Association.

SUGGESTIONS FOR PROSPECTIVE STUDENTS—
Outlines the professional course of study for college students preparing for physical therapy. Of value to the high school student who is planning a college program.

QUESTIONS AND ANSWERS—
A concise outline describing physical therapy education and applications.

Available to chapter chairmen, vocational guidance counsellors, libraries and other individuals or groups who wish more information on physical therapy than is offered in the above items:

OUR ASSOCIATION—
An informational booklet on the activities, scope and services of the American Physical Therapy Association.

CODE OF ETHICS—
Ethics for the physical therapist of the American Physical Therapy Association.

PERSONNEL POLICIES FOR QUALIFIED PHYSICAL THERAPISTS—
Suggestions as to salary, hours, vacations, etc. by the American Physical Therapy Association.

SECTION ON EDUCATION—
A list of postgraduate programs offered by the approved schools and a list of specialized courses for physical therapists.

RECRUITMENT POSTER—
Attractive, colorful, throw-away bulletin board poster to help vocational guidance and recruiting.

JOB OF THE PHYSICAL THERAPIST—
A complete description of what the physical therapist does, where he works and how he functions in the professional field as well as what type of individual he is. (Single copies are free to counsellors, libraries and chapters; additional single copies 50c each, 10-25 copies 35c each, 25 or more copies 25c each.)

U. S. ARMY, U. S. AIR FORCE AND VETERANS ADMINISTRATION PAMPHLETS—
Separate folders listing education, employment or service opportunities in each organization.

MEMBERS, STUDENT MEMBERS OF THE ASSOCIATION AND LIBRARIES MAY HAVE ONE FREE COPY OF EACH SCIENTIFIC REPRINT FOR WHICH THERE IS A CHARGE EXCEPT THE SPECIAL ISSUES OF THE REVIEW AND OTHER SPECIAL MATERIALS FOR WHICH A FEE MUST BE CHARGED:

Scientific Reprints

PHYSICAL THERAPY IN MEDICAL DISEASES OF THE CHEST—*Evelyn A. May* (10c)

PHYSICAL THERAPY IN THE EARLY CARE OF COLD INJURIES—*Mary E. Sacksteder, Capt., WMSC* (10c)

TOYS, GAMES AND APPARATUS FOR CHILDREN WITH CEREBRAL PALSY—*Gladys G. Rogers and Leah Thomas* (10c)

ADMINISTRATION OF A COMMUNITY REHABILITATION CENTER—*Hazel E. Furscott* (10c)

WHEEL CHAIRS—*George G. Deaver, M.D.* (5c)

PHYSICAL THERAPY IN THE PRENATAL PROGRAM—*Gillian Griffith Smith* (5c)

ROLE OF PHYSICAL THERAPY IN CARE OF PSYCHIATRIC PATIENTS—*Lola E. Smith* (5c)

(continued on page 592)

Editorials

OPEN any national magazine, any daily paper or ride even a short distance on a public vehicle and your eyes and, in some celebrated instances, your ears will be assailed immediately with that great American tradition—the advertisement. By radio and television, match-book cover and sky writer comes a constant stream of questions, answers, claims, counter-claims, and urgings to convince you that your life is empty or fraught with danger if you fail to select the product so gloriously displayed.

You may wonder what possible connection there can be between this barrage and physical therapy. But consider carefully for a moment the basic philosophy (if such is the word) which underlies this typically American custom.

Anyone concerned with producing a commodity will agree that no matter how excellent his product is it will not reach the consumer until the consumer is aware of its existence. You may have made a better mouse-trap which satisfies your sense of accomplishment, but it will never be a success until the mice hear about it.

Lest we be misunderstood, this is not meant to convey the impression that advertising, in the strict sense of the word, is acceptable in any profession. But we do wish to make the point that every physical therapist has a responsibility in his everyday life to promote the general knowledge of what he does.

We are a young and comparatively small group and it is not unusual to discover that many people are still completely unacquainted or markedly misinformed as to the work a physical therapist actually performs. None of us is apt to delve deeply into the facts of any vocation unless it touches us personally, or is in some way brought to our attention. Yet, if we are to continue to grow and develop, we must secure the support, approval, and backing of increasing numbers of people so that more and more potential students will hear about and become interested in a career in physical therapy.

There is no question that a comprehensive, dynamic, nationwide campaign would partially accomplish this aim, but we are deeply convinced that there is an even better, more adequate means to promote our capabilities already at hand in the form of individual effort. We do not know of a single physical therapist who is not proud of his work, and yet we wonder how many opportunities to project this pride are missed or ignored because of lack of initiative or failure to understand the advantage which presents itself.

It is regrettable that many of us do not, or will not, take the time to explain our work clearly and simply when asked by an interested person. We tend, instead, to give a superficial answer, feeling that the questioner wouldn't understand a detailed explanation. Our profession will never be understood until we take the time and effort to give the whole picture in an intelligent way at every opportunity!

It is surprising to discover the influence which can be exerted in what apparently are everyday, unrelated situations, if we remain aware of our responsibilities. No one lives in a vacuum, and because of our mode of life we come in contact constantly with a wide variety of persons. If, in our own circles, we make known by any means the nature of our work we will find that

appreciation of the worth of physical therapy will be a constantly expanding thing. By the simple expedient of taking part, as a citizen, in community affairs you can spread knowledge and add to the prestige of your profession. Often the results are not apparent immediately, but it cannot be disputed that good public relations is the key to sound expansion of any service profession, and that physical therapy will benefit by application of these principles.

Researching

HUMAN beings are by nature gregarious and consequently tend to unite their efforts for a common cause. Each individual is not only an integral part of some group, but by the very nature of his affiliation, be it a profession or an institution, he also represents that group. The standards formulated and the recognition attained by any organization depend on the contributions of its members. Each person who positively identifies himself with an institution or profession may aid significantly in its development. In so far as each member contributes his talents to the group he too automatically benefits.

One of the many channels of expression open to the physical therapist is the presentation of original studies at staff conferences, local, regional, or national meetings. Expanding fields of specialization and changing concepts of physical therapy provide a wide variety of vital and interesting topics for discussion. Physical therapy, whether it be in a circumscribed area or in the general diversified clinical field, has a common denominator, the aim to teach the patient to rehabilitate himself. By virtue of the large number of similar disabilities treated, the physical therapist who specializes has an opportunity to develop methods, procedures, and new devices. The basic principles evolved, if made available, are of considerable value to those working with all types of disabilities. Conversely, the physical therapist associated with a general department treats a large variety of pathological conditions and thus, of necessity, utilizes many different approaches for attaining the effective end-point of rehabilitation. These factors, plus the opportunity for a general survey of the conditions treated and the modalities used, are of vast importance if the profession is to keep abreast of the times.

Whatever your particular interest in physical therapy may be, there are areas within your experience which, if publicized will be of value and interest to the rest of your profession.

Because of the broad scope of physical therapy, much in the way of data and information that is new and much that is old, but not available, ought to be shared with fellow workers. Case histories of common or unusual pathologies illustrate specific basic concepts. Problems are worked out by the rehabilitation team, when the complete team is available, or when only the physician and the physical therapist make up the team. The planning, use, and value of record forms in specific situations suggest application in other areas of work. Educational problems specific to the training of physical therapists and those related to group work in total rehabilitation of patients may have elements in common. Historical development of such fields as therapeutic exercise, prosthetic devices, use of ion transfer, lead to evaluation and conclusion for present-day practice. Simple or complex devices can be utilized in measuring training or assisting with functional activities. Utilization of space, personnel, and equipment for maximum

efficiency in a small department or in departments with heavy case loads is of economic as well as professional value.

These are but a few of the many areas of interest suggesting papers for presentation at the 1953 annual meetings in Dallas.

SARA JANE HOUTZ,
Associate Editor

World Confederation for Physical Therapy

1st International Congress—Monday, September 7 to Saturday, September 12, 1953.

Venue of the Congress—The Congress will be held in the Central Hall, Westminster, London, S. W. I.

Registration—Registration for the Congress will take place in the Restaurant of Central Hall, Westminster (entrance in Tothill Street) from 2 P. M. to 9 P. M. on Sunday, September 6, and from 8 A. M. to 9.30 A. M. on Monday, September 7, 1953. Copies of all Congress publications will be issued on registration.

Opening Ceremony—The Opening Ceremony will take place at 10 A. M. on Monday, September 7, 1953, in the Central Hall, Westminster.

St. Paul's Cathedral

Seats will be reserved for members of the Congress at the Service in St. Paul's Cathedral on Sunday, September 6, 1953, at 10.30 A. M.

Official Language

The official language of the Congress will be English, but all papers to be read will be available in French, if required.

Outline of Scientific Program

Monday, September 7	Physical Therapy in Neuromuscular Disorders
Tuesday, September 8	Physical Therapy in the Rheumatic Diseases
Wednesday, September 9	Physical Therapy in Diseases of the Chest
Thursday, September 10	Papers by Physical Therapists on Treatment and Research
Friday, September 11	Physical Therapy in Industry

A detailed program will be published later.

Study Tours—It is thought that while visiting this country, some physical therapists might like to see more of the work in physical therapy than could be gained from single visits to hospitals. If, therefore, a sufficient number are interested, short study tours of about three days' duration will be arranged to take place in one or more hospitals in various parts of the British Isles.

General Assembly—A meeting of the General Assembly of the World Confederation for Physical Therapy will be held during the Congress and the Agenda will be sent to members later.

Exhibition—There will be a trade exhibition, including physical therapy apparatus, in the Central Hall, Westminster, during the Congress. British and overseas firms will be invited to exhibit.

Films—Films on physical therapy and allied subjects and documentary films of general interest will be shown in the Central Hall during part of each day of the Congress. Members of the Congress who have films which they think might be of interest are asked to submit details for approval of the selection committee by December 31, 1952. Only films of 16mm. width can be shown, but they may be silent or sound films.

Travel and Accomodation

Messrs. Thomas Cook and Son, Ltd., and their associated company, la Cie Internationale des Wagons Lits, have been appointed as official agents for travel to and from London and for accommodation in London. Members who wish to avail themselves of the services of Messrs. Thomas Cook and Son, Ltd., should make use of form "B", available in the National Office of the American Physical Therapy Association.

Visitors from overseas are strongly advised to make early application for reservation on form "B." Accommodation can only be reserved for those who have applied for membership of the Congress.

The Congress Authorities regret that in no circumstances can they undertake to find hotel accommodation in London.

Social Program

The following social program is being planned for members of the Congress:

A reception by the Council of the Chartered Society.

Receptions by various official bodies.

An official banquet.

Visits to a house of historic interest, a Housing Estate, the Houses of Parliament.

Additional entertainment is being arranged for Associate Members and will include:

A tour of London.

A trip on the river Thames.

Arrangements can also be made for those wishing to visit historical places, such as Windsor Castle and Hampton Court to do so at their own expense:

Tickets for functions which are optional can be paid for at the time of registration.

Registration Fees

Full Members .....£3 13 6 ..$11.00

Associate Members (i.e. Persons not Physical Therapists, accompanying members) .....£2 12 6.... $8.00

The above fees will apply only to registrations received before March 1, 1953, after which date the following fees will apply:

Full Members .....£4 14 6....$14.00

Associate Members ....£3 13 6.. $11.00

Members who have enrolled, but who are subsequently unable to attend the Congress will, if possible, have their registration fees refunded less 20 percent, provided their cancellations are received by August 10, 1953.

All members and individuals planning to attend the Congress from the United States may obtain an enrollment blank from the National Office of the American Physical Therapy Association.

All enrollment blanks and registration fees (in U. S. dollars) should be returned to the National Office. A small amount above the registration fee which is in English pounds is being charged to cover mailing expenses and sending of drafts to London.

Association Activities

The Director Reports:

The annual meeting of the Congress on Physical Medicine held in New York in August afforded us the opportunity to see many of our friends—physicians, physical therapists, occupational therapists, and exhibitors. All of us in the National Office except the polio consultants attended. Margaret Moore, Elizabeth Wood, and Florence Linduff attended the Registry Board luncheon and meeting. Mrs. Linduff was recently appointed as a member of the Advisory Board.

The amendment to the bylaws of the Congress providing for two members of the American Physical Therapy Association on the Board was passed as was the amendment adding Rehabilitation to the name, making it the Congress on Physical Medicine and Rehabilitation.

Dr. Frank Krusen in giving the annual J. Stanley Coulter Lecture described vividly the first International Congress of Physical Medicine which was held in London in July. He told of Dr. Coulter's untiring efforts in developing the specialty of Physical Medicine, and the many advances which were the result of his efforts. Dr. Krusen had slides showing the colorful ceremonies and other activities of the Congress. Twenty countries were represented at the meeting, with delegates from fifteen, and others by independent members, observers, or visitors. Dr. Krusen was President of the Federation until the close of the meeting when Lord Horder of England became President.

The annual Gold Key Award was presented to Mr. Basil O'Connor, President of the National Foundation for Infantile Paralysis. Mr. O'Connor spoke at the annual banquet and reviewed the efforts of the Foundation to provide personnel for polio patients. He particularly

mentioned the support which has been given to the American Physical Therapy Association for its educational program, to schools of physical therapy, and to individuals through the Scholarship Program.

In the session on Education, Dr. Elkins discussed training standards for physical and occupational therapists. A combined curriculum designed to meet the needs of the physiatrist was presented. This was prepared by a subcommittee of the Educational Advisory Committee to the Council on Physical Medicine and Rehabilitation. The basic subjects, it was suggested, would be given to both groups. Particular emphasis was placed on therapeutic exercise, and there was de-emphasis on massage and electrotherapy. Fourteen hundred hours of study and practice would be required for completion. Prerequisites were two years of college, graduation from a school of nursing, or graduation from a school of physical education.

Dr. Elkins also presented and commented on a Curriculum on Corrective Therapy prepared by the Association for Physical and Mental Rehabilitation. He noted that there was great similarity to the physical therapy curriculum. Time did not permit discussion.

By the time that you read this, the officers of the School Section, the Advisory Committee to the Educational Consultant, and a special committee to consider and make suggestions for revision of the "Essentials of a School of Physical Therapy" will have met in Chicago. Regional meetings of physical therapy directors of the approved schools are being planned for the very near future.

—MILDRED ELSON, *Executive Director*

To the Editor —

I wish to express my complete agreement with the editorial on page 252 (May, 1952 issue).

Since this editorial shows concern over a basic but widespread misconception as to what constitutes physical therapy, I thought it might not be amiss to call attention to another manifestation of the same misconception.

During the course of my career I have started departments in several small hospitals where they have had diathermy for years but nothing resembling rehabilitation. In each case my department has always been referred to as the "diathermy room" by all hospital personnel and I have received numerous prescriptions for "diathermy and physical therapy" or "physical therapy and massage."

In reviewing the abstracts in the *Review* of April, 1952 I was again reminded of this confusion of terminology. In the abstract "Arthritic Deformities of the Wrist and Fingers" on page 216, near the end of the first paragraph we find this statement: "The methods are well known: physical therapy, application of heat, paraffin baths, splinting, manipulative correction, active exercises, etc." We might in this case give the author the benefit of the doubt and assume there is a typographical error in punctuation if it were not for the end of the last paragraph. It says "It is our belief that gentle passive motion *and* physical therapy accomplish a great deal more than manipulation."

When one repeatedly encounters things of this type in the literature written by people advanced enough to be writing in this branch of medicine, it is easy to see how misconceptions are acquired as other people in the medical field read these articles.

Sincerely,

E. M.

Polio Cases Rise

V. A. and Army Loan Physical Therapists

This year, the incidence of poliomyelitis has been greater than any year recorded. Public Health reports show 31,391 cases by mid-September, which is greater by 2,354 than in 1949, when the previous record was reached and 28 percent higher than last year. It should also be noted that poliomyelitis is considered in epidemic proportions when the percentage per 100,000 reaches 20. The incidence in Nebraska by the latest figure was 98.8 per 100,000, which means almost one person per 1000 contracted the disease.

Because the Polio Recruitment Service was unable to meet all the requests pouring in from so many sections of the country, an appeal was made to the Veterans Administration for the release of all possible physical therapists from this service to be used in local situations. Vice Admiral Boone, Chief of the Medical Services, graciously consented to the request and Veterans Administration hospitals in the stricken areas are responding. In Michigan, two physical therapy officers were re-

leased by Percy Jones General Hospital to serve in civilian hospitals nearby, where other means had failed to procure the necessary personnel.

To date, 82 physical therapists have been recruited since June first. Emergency assistance has been offered to the following states: Arizona, Arkansas, Illinois, Iowa, Kansas, Kentucky, Louisiana, Michigan, Mississippi, Nebraska, New Jersey, New York, Ohio, Oklahoma, Texas, Virginia, Washington and West Virginia. In addition, urgent requests have been received from: Washington, D. C., Indiana, Oregon, Pennsylvania, Tennessee, Utah, and Wisconsin. There has been an outstanding response in many localities where permanently employed physical therapists have helped out after regular working hours in hospitals caring for acute cases. We are deeply grateful to everyone who has participated in any capacity in the present emergency.

There are still appeals for fifty more physical therapists. We strongly urge, if you can possibly arrange to serve on a temporary assignment, that you communicate with your Polio Recruitment Service in the National office.

—LUCY BLAIR, *Polio Consultant*

Former A. P. T. A. President Marries

The following announcement will be received with much interest, and Mrs. West's many friends in the Association will join in extending sincere wishes for her happiness.

Dr. and Mrs. William Stevenson

have the honor of

announcing the marriage of their sister

Miss Jessie Stevenson

to

Mr. Harry Richard West

on Saturday, the thirtieth of August

One thousand nine hundred and fifty-two

Flint, Michigan

at home after October fifteenth
55 Bishop Parkway
Pittsfield, Massachusetts

Chapter News

Chapter news "just happens" since it is gleaned from newsletters or correspondence sent to the National Office. Why not make a point of sending a noteworthy release from your chapter to the Editor several times a year?

New York

The four chapters of New York held a joint meeting in Syracuse in October to form one state chapter. Details will be announced in the next issue of the *Review*.

North Carolina

The August number of the chapter newsletter included a form on which each member could record her recruitment participation for the annual chapter report but possibly for personal evaluation of participation also.

Northern Indiana

The first newsletter to be published by this chapter was dated August 1952 and includes a list of members and the speaker for the year's coming meetings.

Washington

There has been organized in eight Western States a Paramedical Career Information Committee. Washington is the first to activate the recruitment drive, which will start the latter part of October.

Through the efforts and enthusiasm of Capt. Gertrude Murray, O.T.R., Women's Medical Specialist Corps Procurement Officer, Presidio, San Francisco, the state team of three professions, occupational therapists, hospital dieticians, and physical therapists, has been formed into the coordinated Paramedical Committee to prevent duplication of resources and to strengthen our efforts through one unified body.

Washington State's central planning committee is composed of the education chairmen of the three professions, and a county representative has been selected from each group to "spearhead" the drive in each area.

Texas

Despite record polio incidence, chapter officers are busily organizing for their host duties of the 1953 Conference in Dallas.

Physical Therapy Scholarship Awarded

The 3,000th scholarship awarded by the National Foundation for Infantile Paralysis was personally presented by Basil O'Connor, president, to Miss Joan K. Sullivan of Peabody, Mass., who came to New York to participate in brief ceremonies at national headquarters, 120 Broadway, New York City.

Miss Sullivan, 20-year-old award winner who entered her final year of study at Boston University on September 22, revealed that scholarships are a Sullivan family affair. Her sister, Marie, she told Mr. O'Connor, received a National Foundation physical therapy scholarship a few years ago and was graduated from Boston University in 1950.

Joan's application was recently reviewed by the scholarship committee and approved on the basis of its own merits. The committee did not realize that Joan's sister had successfully qualified for a scholarship. But the records show that Marie Sullivan received scholarship 1,129. Joan's number is 3,000.

High polio incidence for the fifth consecutive year has made the public acutely aware of the critical shortages of medical, nursing, and auxiliary personnel to care for the stricken, Mr. O'Connor pointed out.

"With everyone deploring the situation, I cannot help but feel proud to head a voluntary health organization that is really trying to do something constructive about it," Mr. O'Connor said.

"It is highly significant that the 3,000th award should be a physical therapy scholarship. For it was our initial effort to increase the ranks of these scarce, skilled workers in 1945 that led to development and steady expansion of our total professional education program. Since 1938 when it was founded, the National Foundation has financed the training of 3,000 men and women—most of them since 1945—in an education program that has cost more than $13,000,000 in March of Dimes funds!

Modern polio care requires a team of trained workers of whom nurses and physical therapists are in especially short supply. But they are needed as urgently in treatment of other illnesses, Mr. O'Connor explained.

While the demand for professional workers in every category is still greater than the supply, the National Foundation plays an important role in making greater numbers available. Recipients of National Foundation scholarships and fellowships are not restricted to the field of polio, Mr. O'Connor emphasized.

"In many fields the National Foundation had to start from scratch," Mr. O'Connor said. "When we entered the fight against polio in 1938, there were less than a half-dozen scientists specializing in virus study in the United States. By September 1952, we had provided from three to five years of training for fifty-five virologists."

His organization has also increased the nation's supply of physical therapists, providing scholarships for about 2,000 of the 6,000 now on duty in this country. The National Foundation, Mr. O'Connor further revealed, has financed professional training of 126 additional orthopedic nurses and 446 medical social workers.

In addition to those who have received scholarships or fellowships in specific fields of study, tens of thousands of physicians, nurses, physical therapists, and other medical workers have benefitted from short-term polio refresher courses and institutes annually assisted by the National Foundation.

Index to Current Literature
(continued from page 580)

Rehabilitation

Rehabilitating Chronic Neuropsychiatric Patients. James A. Stringham, M.D. The American Journal of Psychiatry, June 1952.

Current Trends in Physical Medicine and Rehabilitation. Arthur L. Watkins, M.D. The New England Journal of Medicine, July 17, 1952.

Group Therapy with Parents: An Approach to the Rehabilitation of Physically Disabled Children. D. H. Milman, M.D. Journal of Pediatrics, July 1952.

Principles for Rehabilitation of Injured Worker Established. Bulletin, American College of Surgeons, July-August 1952.

Membership News

Types of Membership Employment

In April all active members were requested to state their type of employment when their dues were paid. The following tabulation of replies received will be of interest and is numerically sufficient to supply statistics regarding the profession.

	Female	Male	Total
Number of Active Members Queried	2,804	371	3,175
Number of Replies Received	1,985	229	2,214
Number Employed in			
Hospitals	1,078	152	1,230
Voluntary	495	72	567
Veterans Administration	173	53	226
Armed Services	200	7	207
Childrens	60	5	65
City	37	4	41
U. S. Public Health Service	31	3	34
County	28	5	33
Orthopedic	27	2	29
State	27	1	28
Public Health Agencies	215	10	225
State	176	7	183
Visiting Nurse Agencies	26	1	27
County	7	1	8
City	6	1	7
Rehabilitation Centers	154	27	181
Schools	119	2	121
Public	81	2	83
Crippled Children	26		26
Orthopedic	12		12
Physicians' Offices	97	11	108
Private Practice	87	10	97
Societies for Crippled Children; Cerebal Palsy	73	7	80
Physical Therapy Schools	51	2	53
Convalescent Homes	16	3	19
Other Professions	23		23
All Others, Such as Industry, Administration, Research and Students	27	3	30
Not Employed	45	2	47

Marriages

Jessie L. Stevenson of Nashville, Tenn., to Harry West, Pittsfield, Mass.

Mildred Friedman of Yonkers, N. Y., to Ben Morris, Yonkers, N. Y.

Dorothy L. Norman of Minneapolis, Minn., now Mrs. Dorothy N. Berlage, Minneapolis, Minn.

Mary A. Rooney of Chicago, Ill., to Robert White, Toledo, Ohio.

Martha Ewing of Steubenville, Ohio, now Mrs. Martha E. Pulford, Morristown, N. J.

Claire J. Barclay of Barre, Vt., to John L. Toner, Boston, Mass.

Grace M. Fedullo of Hazleton, Pa., now Mrs. Grace F. Laregina, Hazleton, Pa.

Alberta Wilson of Fayetteville, Tenn., now Mrs. Alberta W. Grace, Oak Ridge, Tenn.

Marcia Cocking of Benton Harbor, Mich., now Mrs. Marcia C. Howard, Fresno, Calif.

Shirley Ludwig of Evanston, Ill., to Neil Beuford, Evanston, Ill.

Joan E. Morrow of Lunenburg, Nova Scotia, now Mrs. Joan M. Mason, Halifax, Nova Scotia.

Priscilla Lewis of Cincinnati, Ohio, now Mrs. Priscilla L. MacNaughton, Norwood, Ohio.

School News

University Offers Workshop on Poliomyelitis

The Physical Therapy Department will offer two Workshops on Poliomyelitis during the 1952-53 school year, in affiliation with Los Angeles County General Hospital, Orthopaedic Hospital, and Rancho Los Amigos. Work will be directed primarily toward the treatment of the acute and respirator patient and will include lecture and laboratory. Three units (semester hours) of graduate credit can be earned.

All students will take the one-week survey course offered by Orthopaedic Hospital. This registration is separate and requires application to Miss Susan Roen, Physical Therapy Department, Orthopaedic Hospital.

Following the week at Orthopaedic Hospital, students will enroll at the University for the Workshop. Practical work will be taken at Los Angeles County General Hospital, Communicable Disease Unit, and at the Respirator Center of Rancho Los Amigos.

For information as to the type of work to be included read the Polio Issue of the *Physical Therapy Review* (July, 1952). Authors; Austin, Dail, Nygren, et al.

Eligibility and Application:

To the Orthopaedic Hospital course. Write to Miss Susan Roen, Orthopaedic Hospital, 2424 South Flower Street, Los Angeles 7, California.

To the Workshop on Poliomyelitis. Graduates from an A. M. A. approved school of physical therapy, write to Miss Charlotte W. Anderson, Physical Therapy Department, University of Southern California, Los Angeles 7, California.

Dates of Courses:

Orthopaedic Hospital Course
April 13-18, 1953
Workshop
April 20—May 8, 1953

Tuition:
Orthopaedic Hospital Course
$15.00
Workshop
$57.00 (3 units @ $19.00)

For scholarship information write to the National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York 5, New York.

General News

National Health Council Appointment

The National Health Council announces the appointment of Josephine Nelson as director of public information. Miss Nelson has been with the Council since mid-June as an assistant to Dr. Dublin, executive director.

Miss Nelson worked for newspapers in her native state, Kansas, and in Chicago, and for magazines in New York before entering the health field during World War II. She was director of public information for the National Nursing Council and public information secretary for the Committee on the Structure of National Nursing Organizations. She was in Washington for four months in the spring with the President's commission on the Health Needs of the Nation.

Heart Association Issues New Scientific Journal.

A new bimonthly scientific journal, "Circulation Research," the only publication devoted exclusively to reports on fundamental studies related to the heart and circulation, will be issued by the American Heart Association as a further step in the development of its professional education program. Announcement of the new journal was made jointly by Dr. Irving S. Wright, President of the Association and Chairman of its Publications Committee, and Mr. Henry M. Stratton, President of Grune and Stratton, Inc., New York medical publishers who also publish "Circulation," the monthly journal of the American Heart Association. The first issue of the new publication will appear in January 1953.

The editor of the new bimonthly, Dr. Wiggers, expressed the hope that "Circulation Research" would become "the medium for the best in various disciplines of fundamental research that may throw light on cardiovascular problems. These would include anatomic, biologic, biochemical, biophysical, morphologic, pathologic, and pharmacologic aspects, regardless of whether they emerge from laboratories of these basic disciplines or from clinical divisions." Dr. Wiggers added, "Since research acquires its full importance only after publication, the new journal will aim to narrow the gap between the completion of a discovery and its publication in the scientific literature."

In addition to original papers on fundamental research, editorials on appropriate subjects and short preliminary reports on "research in progress" will be included.

"Circulation Research" will be edited by Dr. Carl J. Wiggers, Professor and Director, Department of Physiology, Western Reserve University School of Medicine, Cleveland. Dr. Robert S. Alexander, Associate Professor of Physiology at the same institution, will be Assistant Editor.

"Circulation," which is in its third year of publication, will continue as a separate journal under the editorship of Dr. Thomas M. McMillan, Philadelphia. It will concentrate more fully on clinical problems and applied research, as distinguished from fundamental research in the cardiovascular field.

Physical Therapy Bulletin Revised

Bulletin No. 203-1 of the Women's Bureau, "The Outlook for Women as Physical Therapists," is now for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price twenty cents.

This is a 51-page booklet which describes in detail the status of physical therapists today, educational requirements, supply, demand, and the employment outlook. This bulletin will be valuable for vocational counselors and in particular as a reference for recruitment activities.

Pan American Health Organization Meets

The seventeenth meeting of the Executive Committee of the Pan American Sanitary Organization met in Havana, Cuba, September 10,

with Dr. Cesar Cordillo Zuleta of Peru presiding at the opening session.

This committee, composed of representatives of seven of the 21 American Republics, meets every six months to review public health work in the Americas. Their present meeting preceded the sixth meeting of the Directing Council of the Pan American Sanitary Organization. The Directing Council, with a delegation from each of the 21 American Republics, meets annually to discuss and approve among other things the programs of work and budget. It also acts as a Regional Committee of the World Health Organization for the Americas.

Physical Therapy in Israel

A pamphlet is available called *Physiotherapy and Occupational Therapy in Israel.* Published by PATWA (Professional and Technical Workers Aliya), it describes the growth and development of these professions in Israel and stresses the need for additional personnel from abroad.

The largest number of physiotherapists are employed by the Ministry of Health, the army, and semipublic medical institutions, while a few are in private practice. Physiotherapists with an all round training as well as those with specialties in Tuberculosis, Pediatrics, Poliomyelitis and Cerebral Palsy are needed. The above pamphlet may be obtained by writing Mr. Leo Krown, Jewish Agency for Palestine, 16 East 66 St., New York 21, N. Y.

New Booklet on Self-Help Devices

Booklet No. 5 of the series of Self-Help Devices for Rehabilitation has now been published. This series results from a cooperative service project made possible by the National Foundation for Infantile Paralysis, and conducted by the New York University-Bellevue Medical Center Institute of Physical Medicine and Rehabilitation.

Booklet No. 5 presents a number of articles of a general nature, including some special clothing.

Problems of the Retarded Child

The Woods Schools, a private residential school for exceptional children at Langhorne, Pennsylvania, has just published in booklet form the proceedings of a recent conference on the problems of the retarded child, entitled, "Helping Parents Understand the Exceptional Child."

Copies of the booklet may be obtained by writing to the Child Research Clinic of the Woods Schools, Langhorne, Pennsylvania.

New Booklets on Poliomyelitis

The Division of Professional Education of the National Foundation for Infantile Paralysis has issued two new booklets, "Management of Poliomyelitis Patients with Respiratory Difficulty," and "Isolation Techniques and Nursing Care in Poliomyelitis." The former, a digest of a larger manual of the same title, which will be available for limited distribution, contains material particularly directed to physicians, but also of some interest to physical therapists who are called on to work with acutely ill poliomyelitis patients with respiratory difficulty.

"Isolation Techniques and Nursing Care in Poliomyelitis" a 20-page booklet was developed to meet the demand of nurses and other professional groups for information on isolation and nursing procedures. These booklets may be obtained from the National Foundation for Infantile Paralysis, 120 Broadway, New York, New York.

Foreign Notes and Quotes

World Veterans Federation

By courtesy of the British Ministry of Pensions, the World Veterans Federation held a course in prosthetics at Roehampton, England, in October. (Miss Dorothy Dodd, chief physical therapist at Roehampton, attended the American Physical Therapy Association Conference in Philadelphia as official delegate of the Chartered Society of Physiotherapy.)

The course was planned to demonstrate the value of a complete prosthetic service. Teams from Holland, Belgium, France, Italy, Jugoslavia, Greece, Israel, Turkey, and Finland were invited. The course was co-sponsored by the International Society for the Welfare of Cripples.

REPRINTS AVAILABLE (Continued from page 581)

METHODS OF CLINICAL INSTRUCTION IN PHYSICAL THERAPY—*Beatrice E. Whitcomb, Capt., WMSC* (10c)

PHYSICAL THERAPY IN THE HOME—*Arthur L. Watkins, M.D.* (5c)

PHYSICAL THERAPY IN STATE CRIPPLED CHILDREN'S PROGRAM—*Clara M. Arrington* (5c)

THE USE OF LEAD-UP FUNCTIONAL EXERCISES TO SUPPLEMENT MAT WORK—*Morton Hoberman, M.D., Erbert F. Cicenia, Hyman L. Dervitz and Oscar C. Sampson* (10c)

THE REHABILITATION OF APHASICS—*Dorothy Britton* (10c)

Special Materials

BIBLIOGRAPHY ON NATURAL CHILDBIRTH (10c)

READING REFERENCES FOR ELECTRICAL DIAGNOSIS AND ELECTRICAL STIMULATION— (10c)

FILM LIST OF SPECIAL INTEREST TO PHYSICAL THERAPISTS AND STUDENT PHYSICAL THERAPISTS
These films may be secured on rental, loan or sale depending on the course. Unless otherwise specified, all films are believed to be 16 mm. (15c)

SPECIAL FUNCTIONAL ISSUE OF THE *Review* (NOVEMBER 1949)—
Contains eight articles by leading physicians and physical therapists on functional training, crutch walking and wheel chairs. There are twenty-six abstracts of articles on functional training from current medical journals. (50c)

POLIO ISSUE OF THE *Review* (JULY 1951)—
Contains eight articles by leading physicians and physical therapists. There are thirty-one abstracts from current medical journals. (50c)

CEREBRAL PALSY ISSUE OF THE *Review* (FEBRUARY 1952)—
Contains six articles by outstanding experts in the field of cerebral palsy. (50c)

PHYSIOLOGY OF THE HEART AND CIRCULATION AND ITS CLINICAL APPLICATION IN PHYSICAL MEDICINE—
A bound edition of the papers presented in a symposium at the 1950 annual conference of the American Physical Therapy Association with introduction by Harry D. Bouman, M.D., Coordinator. ($1.00)

ESSENTIALS OF A HOSPITAL DEPARTMENT—PHYSICAL THERAPY—
This manual is designed to supply broad guidance in planning, installing, equipping and administering a physical therapy department in a hospital. Compiled by experts in many fields and published by the American Hospital Association. (To members 25c)

PLAN AND SPECIFICATIONS FOR AN ALL-WELDED STEEL TREATMENT POOL— (No charge)

ORGANIZATIONAL GUIDE FOR SCHOOLS OF PHYSICAL THERAPY—
Gives a broad interpretation of the essentials of a physical therapy school as established by the Council on Medical Education and Hospitals of the American Medical Association. (No charge)

SPECIAL POLIO ISSUE OF THE *REVIEW*

The July issue of the *Physical Therapy Review*, which includes timely and informative articles on the treatment of the poliomyelitis patient with emphasis on his care in the respirator, is available at special rates on quantity orders. Single copies of the July 1952 journal are 75c per copy; in orders of 10 to 50 it will be 50c; 50 to 100, 35c; 100 or more, 25c each. There are special rates for students in approved schools of physical therapy.

All requests should be addressed to American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

Schools of Physical Therapy

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS
OF THE AMERICAN MEDICAL ASSOCIATION

Graduates of these schools are eligible for membership in the American Physical Therapy Association.

Name and Location of School	Medical Director and Technical Director	Entrance Requirements	Length of Course	Classes Start	Certificate, Degree, or Diploma
CALIFORNIA					
[1] **Childrens Hospital Society,** Los Angeles (in affiliation with University of California, Los Angeles)	Samuel S. Mathews, M.D. Mary J. Dodge	a^3-b^3-d-e g^4	14 mo 4 yrs	Sept	Certificate Degree
[1] **College of Medical Evangelists,** Loma Linda	F. B. Moor, M.D. R. Wm. Berdan	a-b-c-d-e g	15 mo 4 yrs	Sept	Certificate Degree
[1] **Univ. of So. California,** Los Angeles	Charles L. Lowman, M.D. Charlotte W. Anderson	a-b-d-e g^4	14 mo 4 yrs	Sept Sept-Feb	Certificate Degree & Cert.
[1] **Univ. of California Medical School,** San Francisco	Lucile M. Eising, M.D. Margery Wagner	d-e g	12 mo 4 yrs	Sept-Feb	Certificate Degree
[1] **Stanford Univ.,** Palo Alto	Wm. Northway, M.D. Lucille Daniels	a-d-e-f g^4	12 mo 4 yrs	Jan-June or Sept	Certificate Degree
COLORADO					
[1] **Univ. of Colorado Medical Center,** Denver	Harold Dinken, M.D. Dorothy Hoag	a^3-b-d-e g^4	12 mo 4 yrs	Sept	Certificate Degree
ILLINOIS					
Northwestern Univ. Medical School, Chicago	Emil D. W. Hauser, M.D. Elizabeth C. Wood	a-b^3-d-e	12 mo	Oct	Certificate
IOWA					
[1] **Univ. of Iowa,** Iowa City	W. D. Paul, M.D. Olive C. Farr	b-e	12 mo	Sept	Certificate
KANSAS					
[1] **Univ. of Kansas School of Medicine,** Kansas City	Donald L. Rose, M.D. Ruth Monteith	a-b-d-e g^4	12 mo 4 yrs	Feb-Sept	Certificate Degree
MASSACHUSETTS					
Bouve-Boston School, in affiliation with Tufts College, Medford 55	Howard Moore, M.D. Constance K. Greene	g^4	4 yrs	Sept	Degree
Simmons College, Boston	Wm. T. Green, M.D. Arthur L. Watkins, M.D. Shirley Cogland	a^3-b-d-e g^4	16 mo 4½ yrs	Sept	Diploma Degree
Boston Univ., Sargent College of Physical Education, Cambridge	Kenneth Christophe, M.D. Adelaide McGarrett	a-b-d-e f-g^4	12 mo 2 or 4 yrs	Sept	Certificate Degree
MINNESOTA					
[1] **Univ. of Minnesota,** Minneapolis	Frederic J. Kottke, M.D. Ruby Green Overmann	d-f-g^4	2 yrs	Sept	Degree
[1] **Mayo Clinic,** Rochester	Earl C. Elkins, M.D. Darrell Hunt	a-b-c-d-e	2 yrs	Sept	Certificate
MISSOURI					
[1] **Washington Univ. School of Medicine,** St. Louis	Sedgwick Mead, M.D. Beatrice F. Schulz	f-g^4	2 or 4 yrs	Sept	Degree
[1] **St. Louis Univ. School of Nursing,** St. Louis	A. J. Kotkis, M.D. Sr. Mary Imelda	f-g^4	2 or 4 yrs	Jan-Sept	Degree

Name and Location of School	Medical Director and Technical Director	Entrance Requirements	Length of Course	Classes Start	Certificate, Degree, or Diploma
NEW YORK					
Albany Hospital, Albany (in affiliation with Russell Sage College, Troy)	John W. Ghormley, M.D. Gladys Woods	a-b-d-e g[4]	12 mo 4 yrs	Sept	Certificate Degree
[1] **Columbia Univ.,** New York	Wm. B. Snow, M.D. Mary E. Callahan	a-b[3]-e f	12 mo 2 yrs	Sept	Certificate Degree
[1] **New York Univ., School of Education,** New York	George G. Deaver, M.D. Elizabeth C. Addoms	a[3]-b[3]-d-e g[4]	12 mo 4 yrs	Sept	Certificate Degree
NORTH CAROLINA					
[1] **Duke Univ., School of Medicine,** Durham	Lenox Baker, M.D. Helen Kaiser	a[3]-b[3]-d-e	15 mo	Oct	Certificate
OHIO					
[1] **The Frank E. Bunts Educational Institute** (in affiliation with the Cleveland Clinic)	Paul A. Nelson, M.D. Dorothy Sparks	a-b-d-e	12 mo	Oct	Certificate Degree
PENNSYLVANIA					
[1] **D. T. Watson School of Physiatrics,** Leetsdale	Jessie Wright, M.D. Kathryn Kelley	a[3]-b[3]-d-e	12 mo	Oct	Diploma
[1] **Univ. of Pa. School of Auxiliary Med. Serv.,** Division of Physical Therapy, Philadelphia	George M. Piersol, M.D. Dorothy Baethke	e g[4]	12 mo 4 yrs	Sept-Feb Sept	Certificate Cert. & Degree
TEXAS					
[1] **Hermann Hospital,** Houston	Oscar O. Selke, Jr., M.D. Elizabeth McK. Barkley	a-b-d-e	12 mo	Oct	Certificate
[1] **Univ. of Texas School of Medicine,** Galveston	G. W. N. Eggers, M.D. Ruby Decker	a-b-e d	12 mo	Jan	Certificate Degree
VIRGINIA					
[1] **Med. College of Va.,** Baruch Center of Phys. Med., Richmond (in affiliation with Richmond Prof. Inst.)	Herbert W. Park, M.D. Susanne Hirt	a-b-d-e g[4]	12 mo 4 yrs	Sept	Diploma Degree
WISCONSIN					
[1] **Univ. of Wisconsin Med. School,** Madison	Harry D. Bouman, M.D. Margaret Kohli	a-b-c-e-f g[4]	12 mo 4 yrs	Sept Sept-Feb	Certificate Cert. & Degree
U. S. ARMY MEDICAL SERVICE					
Medical Field Service School, Brooke Army Medical Center, San Antonio, Texas, and Fitzsimons, Walter Reed, or Letterman Army Hospitals	Charles D. Shields, Lt. Col., M.C. Agnes P. Snyder, Major, WMSC	e	12[2]	Mar-Sept	Certificate

Entrance Requirements

FOR ONE-YEAR COURSE

a = Graduation from accredited school of nursing.
b = Baccalaureate degree with major in physical education.
c = Two years of college with science courses.
d = Three years of college with science courses.
e = Baccalaureate degree with required science courses.

FOR TWO-YEAR COURSE

f = Two years of college with science courses.

FOR FOUR-YEAR COURSE

g = High school graduation.

Footnotes

[1] Male students admitted.

[2] Apply directly to the Surgeon General, Department of the Army, Washington 25, D. C.

[3] Additional college science credits required.

[4] Advanced standing students accepted.

Please address initial correspondence to the School of Physical Therapy in the institutions listed. Tuition and fees will vary from school to school.

Abstracts

Heating the Knee Joint

H. M. Whyte and S. R. Reader. In ANNALS OF THE RHEUMATIC DISEASES, 11:1:54, March 1952.

It is generally conceded that radiant heat is less effective than diathermy for heating joints. Whyte and Reader have made some observations on this point in the knee joint in the course of other studies and have presented their methods and results which may be of value to those who are interested in measuring joint temperatures and assessing the effectiveness of treatment.

Three methods of heating were used in the study: long infra-red radiation, short infra-red radiation, and diathermy, the latter proving to be the best method for heating the knee joint. The fact that diathermy caused the joint temperature to rise above the normal temperature of blood is an indication of deep penetration by this form of heat. On the other hand, the delayed and poor response to radiant heat can be interpreted to mean that infra-red radiation, even of the most penetrating type such as that given by a tungsten filament lamp, has no direct effect on the joint. When radiation is applied to the knee the heat is absorbed by the skin and superficial tissues and is carried away by the blood without directly influencing to any appreciable extent the temperature of the underlying joint. However, the absorption of heat and the consequent increase in blood flow lead to gradual warming of the whole leg, as a result of which the temperatures throughout the limb, particularly in the center, approach the temperature of the blood. Therefore, the application of moderate amounts of heat to the whole limb probably is more efficient than applying intense heat restricted to the region of the joint when radiant heat, hot-water bottles, or other nonpenetrating forms of heat are used. The most that can be hoped for with these methods is to raise the joint temperature to 37 degrees C. or slightly more. The most efficient heating would be given by warming the whole limb at the same time as applying diathermy to the knee.

Principles of Rehabilitation in Disseminated Sclerosis

Ludwig Guttmann, O.B.E., M.D., M.R.C.P. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 15:8:189, August 1952.

Physical medicine has always played an essential part in the various methods of prescribed symptomatic treatment in disseminated sclerosis. However, as a rule, emphasis is laid too much, if not entirely, on the relief of specific symptoms. Patients are spending too much of their time in physical therapy departments, which, indeed, all too often become dumping grounds for cases in progressed stages of the disease. In order to remedy such an unsatisfactory situation, which only results in waste of manpower and public money, the person in charge of a physical therapy department should insist on reassessment of these patients, at regular and frequent intervals, by the physician in charge of the cases, who should take full share in the responsibility for treatment, and thus prevent the misuse of the department of physical medicine.

On the other hand, it is not yet generally recognized that the methods of physical medicine in these patients—in particular, those of compensatory training to stimulate and promote the many readjustment forces in body and mind—should be systematically utilized in the early states of disseminated sclerosis. This applies not only to specific types of exercises for promoting or facilitating movement of certain muscles or muscle groups, but also to purposeful curative occupation to maintain the patient's independence in the various activities in ordinary daily life.

The peculiar nature of disseminated sclerosis, as a chronic disorder of the central nervous system, in particular, the factor of increased fatigability, which is so prominent in many patients, often makes it more difficult than in other chronic nervous disorders to assess the actual mental and physical capabilities of a patient. Therefore, a thorough, individual planning of the patient's daily activities in the various stages of the disorder is the more essential, to prevent fatigue and thus maintain or restore the patient's independence and working capacity. In patients in more progressed stages, emphasis should be laid on those daily activities which involve self-care of the patient.

There is general agreement that active and passive movements of all joints represent the treatment of choice in patients with disseminated sclerosis. The type and duration of these exercises vary considerably according to the type and severity of spasticity. The primary aim of these exercises must be the achievement of relaxation of the spastic muscle groups, and in certain exercises Guttmann's pedal exerciser can be employed with great benefit. Other aids are exercises on pulleys and the Guthrie-Smith apparatus. The relaxing effect of hydrotherapy in patients with spasticity cannot be overstressed, and it is sometimes amazing to see how, after a prolonged bath, the isolated movements are greatly improved.

All graded exercises in cases of disseminated sclerosis, whether spastic or ataxic, demand a great deal of patience on the part of both the patient and the physical therapist. Therefore, it is obvious that sports and games adjusted to the limited abilities of the patients are of great therapeutic value, if only from a psychological point of view. Darts, table tennis, skittles, ball games, club swinging, and sometimes archery can be successfully employed.

Poliomyelitis and Injections

Mario S. Cioffari, M.D. In THE JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY, 51:6:727, June 1952.

This year something new has been added: the question of whether there is any connection between all types of hypodermic injections and the incidence and severity of poliomyelitis. The importance is obvious; we have been trying for years to convince people of the necessity of immunization, and now considerable doubt has already developed in the minds of parents, whether to have the injections during the summer, or whether to have them at all, which is very regrettable. With this thought in mind a study of cases has been made.

In the four years 1948-1951 we have given 3,200 injections in our private practice during the months in question—1,664 in boys and 1,536 in girls from the age of six weeks to fifteen years.

The serums and vaccines included were pertussis, diphtheria, and tetanus—single and in combination, fluid and alum-precipitated—smallpox, scarlet fever, influenza, and catarrhal vaccine, Schick and Dick tests.

In this series there was only one very mild paralytic poliomyelitis case within three months of injection, not related to the site of inoculation.

Cioffari feels that there is no relation between the incidence rate of poliomyelitis and injections of any kind. If there is any relation to severity, the proof is still forthcoming; the weight of evidence thus far presented does not warrant the postponement of protection and treatment by injection for a period of six to eight months out of the year.

It would be advisable, for the present at least, to finish the first series of immunizations by six to seven months of age, and to give the occasional booster when necessary.

The Poison Cause of Poliomyelitis and Obstructions to its Investigation

Ralph R. Scobey, M.D. In ARCHIVES OF PEDIATRICS, 69:4:172, April 1952.

The finger of suspicion has for centuries been pointed toward food as the cause of paralytic affections occurring during the season when poliomyelitis epidemics are known to occur.

It is a well-known fact that certain plants have natural poisonous properties, for example, toadstools, but it is not generally realized that some natural foods that are usually considered to be wholesome and nutritious may at times be poisonous. Such factors as drought, or excessive rainfall, fertilization with nitrates, and the character of the soil may result in the development of poisons in plants that are ordinarily edible. The frequent observation that epidemics of poliomyelitis often occur and not infrequently are confined to districts affected by drought is noteworthy in this connection.

The public, as well as many physicians, is under the impression that viruses are living organisms comparable to a germ that enters the human, animal or plant to cause the disease; but the scientists, who are the authorities on virus diseases, are in disagreement as to the nature of a virus. It is not generally realized that some so-called virus diseases may result from the effects of poisons on the human body.

The fact that an extensive epidemic of poliomyelitis was prevailing in the states of New York and Massachusetts in 1907, aroused the suspicion that the disease was infectious and communicable; it was therefore incorporated into the Public Health Law as such. However, conclusive evidence of contagiousness was not established during that epidemic nor in subsequent ones. Moreover, conclusive evidence of contagiousness was not established in 1949, during the greatest epidemic of poliomyelitis ever recorded in history, as shown by the records of the U. S. Public Health Service and the New York State Department of Health. As a result of the inclusion of poliomyelitis in the Public Health Law as a contagious, communicable or infectious disease, investigations regarding it are almost exclusively in the hands of specialists in virology and public health.

Mistakes have been made in the past whereby diseases considered to be infectious and communicable were later conclusively shown to be neither infectious nor communicable but related to vitamin deficiency or food poisoning.

It is extremely difficult to understand how a human can contract poliomyelitis from another individual through dissemination of a virus by contact, carriers, excrement, unclean hands, unwashed fruits and vegetables, flies, etc., when a healthy animal in the same cage with an "infected" animal, exposed to all of these natural factors, remains unaffected. It appears obvious, therefore, that communicability should have been established conclusively both in humans and in experimental animals before poliomyelitis was incorporated into the Public Health Law as a communicable disease.

Treatment of Peripheral Arterial Diseases

Hugh Montgomery, M.D. In DELAWARE STATE MEDICAL JOURNAL, 24:4:83, April 1952.

Two principles underlie the treatment of ischemic diseases of the extremities: (1) the use of measures that decrease the need for blood flow; preventing and controlling injury and infection, and (2) the use of measures that increase the flow of blood: food, warming, vasodilator drugs, interruption of the sympathetic innervation, and certain exercises and physical apparatus.

No heat greater than body temperature should be applied directly to an ischemic area. However, heat can be used to great advantage if it is applied elsewhere to the body. If the feet are ischemic, and the hands are not, the hands and forearms can safely be immersed in warm water, 110 degrees, producing vasodilatation in the feet usually within a few minutes. Heating pads and blankets can be substituted for the water.

Buerger's exercises, with patient reclining on the bed or on a couch with his back propped up by pillows, undoubtedly are a valuable adjunct to treatment of a severely ischemic limb and they also serve a second purpose as a mild, body exercise, beneficial to an elderly, bedridden patient. Patients who cannot tolerate the exercise because they are too weak, and those having chronic ulceration or gangrene with signs of spreading infection should not be given these exercises, but may benefit from the Sanders oscillating bed.

Suction and pressure therapy, or "pavaex" therapy, acts in the same general way as Buerger's exercises, in that it increases blood flow in a limb by pressure changes. Its special usefulness is with patients sustaining recent, sudden embolism. Suction and pressure can also be used to advantage in the case of the patient with severe, chronic, ischemia without infection, if he has pain that is relieved by the procedure.

The Office Management of Low Back Pain, Including the Care of the Industrial Back

Henry H. Kessler, M.D. In THE JOURNAL OF THE MEDICAL SOCIETY OF NEW JERSEY, 49:8:254, August 1952.

The aim of all treatment is to relieve pain, to restore function, and to restore working capacity. Treatment of the low back case falls into two categories: treatment of the deranged disk, and treatment of all the nondisk cases.

Rest is still one of the cardinal

methods of treatment, and one of the safety factors in the human economy. Rest can be achieved through recumbency, with or without traction, or with support in the form of soft or rigid braces. Rest in the form of bedrest or splinting by braces is still a satisfactory method, but one which is constantly overlooked because of the pressure of business and personal problems on th patient. Rest can also be achieved through more intensive immobilization by means of a plaster jacket.

Manipulation is a field of treatment which has been largely overlooked by orthopedic surgeons and has become one which the chiropractor and the osteopath have almost taken over. There still is room for manipulative surgery in many of the acute conditions of low back pain.

There are two ideas of treatment for low back pain: conservative and radical (or surgical). Neither is absolutely right for all cases, and many cases of low back pain with sciatica should receive a reasonable program of conservative treatment. This would include bedrest, traction, immobilization in a plaster jacket, appropriate braces and systemic exercises.

Treatment of Flatfeet in Children

J. H. Kite, M.D., F.A.C.S. In MEDICAL ANNALS OF THE DISTRICT OF COLUMBIA, 21:6:316, June 1952.

Flatfoot deformity in children is due to a muscle imbalance. The muscles on the lateral side of the foot work at an advantage and pull the foot into a flatfoot position. Mild cases may be treated by swung-in shoes alone. The more severe flatfeet need manual stretchings in addition to swung-in shoes. Older children are taught exercises, as follows:

With the patient sitting, he is taught how to turn the foot down and in and up, pulling it up with the anterior tibial muscle, and holding it for the count of ten. This is repeated a given number of times. While standing, he is taught to stand pigeon-toed and to come up on the tiptoes, hold it for an instant and return. This is done a given number of times. With him still standing pigeon-toed, he is next taught to come up on the lateral border of the feet and to hold it for an instant, and to do this the same number of times. If the heel cords are short, a fourth exercise is taught. The patient stands near a wall and leans forward and touches his chest to the wall. He must stand pigeon-toed and must keep his heels tight on the floor. More stretch can be put on the Achilles tendon if he stands a little farther from the wall.

Arch supports are used only occasionally for the more severely deformed feet. Satisfactory results may be expected if the treatment is begun early and followed persistently.

Peripheral Nerve Injuries

A. J. Slessor, M.V.O., F.R.C.S. In EDINBURGH MEDICAL JOURNAL, 59:1:13, January 1952.

In the treatment of peripheral nerve injuries in the early days of the war there was a tendency to oversplint and to splint incorrectly, and the main disability of some patients today can be attributed to this tendency, in particular with regard to the metacarpophalangeal joints. Slessor believes that splints are necessary for only four types of nerve injury: paralysis of the deltoid; paralysis of biceps brachii; paralysis of the musculospiral nerve where use of a good splint will not only prevent overstretching of the paralyzed muscles but will permit useful function in the hand, and to prevent foot-drop in paralysis of the lateral popliteal nerve. He feels that to date a satisfactory splint for injuries of either median or ulnar nerve has not been devised, and that an intelligent patient can prevent deformity by faithful passive exercise of the affected digit, which should be taught him by his surgeon.

A limb which is the site of nerve injury must undergo a full range of movement at least three times a day; this should be active when possible, passive when necessary, and should be supervised by a physical therapist at least once each day. This is by far the most important part of physical therapy in nerve injuries, and the most important part of nonoperative treatment. During the war, more than 500 patients were sent home by troopship without facilities for treatment en route, and when Slessor saw many of them later, it was obvious that the mobility of their hands was directly proportional to the assiduity with which the movements had been performed. Passive movements should be begun as soon after wounding as the patient can cooperate; stiffness and contractures almost disappeared in patients from the Burma front once this became understood by the forward medical officers.

Once a limb has been warmed, massage may be comforting, but Slessor doubts if it has any true therapeutic value in peripheral nerve injuries.

In any center where large numbers are under treatment, the routine use of galvanic stimulation is impossible since there is not sufficient time. Nevertheless, it has been shown that the application of 90 stimuli each day for six days each week is successful in preventing wasting of intrinsic hand muscles, except in the early weeks following injury, when it lessens the amount of wasting, that in itself being of significance. This is more practicable if reserved for injuries of the median and ulnar nerves.

Once neurological recovery has occurred, an attempt must be made to enable the patient to resume accurate voluntary control. Some attempt must be made to reeducate the individual muscle to respond, but it has to be confessed that the results are in the main disappointing.

A New Approach to the Treatment and Prophylaxis of Colds

M. G. Good, M.D., In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 15:7:163, July 1952.

A new conception was considered, namely, that in the common cold, whatever the cause, the primary pathogenetic mechanism is the formation of histamine. Since adrenaline is a *physiological* antihistaminic, a synthetic allied sympathomimetic compound, *d*-deoxyephedrine (Methedrine), was used for the effective control of the malady. Clinical trials extending over several years seem to justify the conclusion that Methedrine in suitable doses is capable of abolishing all the symptoms of acute cold and respiratory catarrh effectively and rapidly. If continued for a number of days, Methedrine appears to cure acute colds, without recurrence after discontinuing the drug. It gave satisfactory therapeutic results in subacute and chronic bronchitis.

Physical Medicine and Rehabilitation in Acute Myocardial Infarction

Louis B. Newman, M.E., M.D., Mildred F. Andrews, B.S., P.T., Margaret O. Koblish, B.S., O.T.R., and Lyle A. Baker, M.D., Hines, Ill. In ARCHIVES OF INTERNAL MEDICINE, 89:4:552, April 1952.

This is a report of a program which involves both physical and occupational therapy which was organized and put into effect as a routine part of the management of all patients with acute myocardial infarction. This program has been in effect since June 1948 and the results have been extremely gratifying.

The first week of treatment consists of complete bedrest, with interviews by the rehabilitation staff if the patient's condition permits. The active program begins in the second week, with the following immediate objectives: (1) To teach the patient both physical and psychological rest. (2) To instill a proper mental attitude in the patient toward his illness and to prevent the development of anxiety neurosis. (3) To return muscle tone and strength in order that the patient may be ready for physical activity. (4) To aid in prevention of peripheral circulatory stasis which is conducive to phlebothrombosis. (5) To help the patient understand his physical limitation and how to control his activities during convalescence and after discharge. The patient is given supervised exercises, including diaphragmatic breathing exercises, which are gradually increased in the third and fourth weeks. Progressive walking is started in the fifth week, and during the sixth week is increased to include stair climbing. Ambulation thus is accomplished with less physiological disturbance and apprehension, and strength and endurance are recovered more rapidly. It also has been noted that the incidence of anxiety neurosis following recovery from acute myocardial infarction is much less.

Since this program was initiated, approximately 300 patients suffering from acute myocardial infarction have been managed accordingly. For the most part, the response and cooperation of the patients to this program have been gratifying. Acceptance has been stressed by Grayson as of great importance in the success of any rehabilitation venture. Among patients suffering from acute myocardial infarction, this factor is rarely lacking. On occasion a patient, because of lack of sufficient insight, may consider the conservative, slowly progressive activity as ridiculous and may resent the close supervision. Occasionally, resentment of the patient toward the misfortune of his illness is so great that it is impossible to create any interest on his part in rehabilitation. In the majority of such cases, however, the program seems to be the most successful means of overcoming this particular mental attitude. Generally the patients welcome and are appreciative of the close attention, encouragement, and progressive nature of the program. It does much to offset the monotony, as well as giving them an objective means of measuring their progress through increasing physical activity.

The rehabilitation program contributes to more satisfactory recovery and adjustment on the part of the patient. Whenever possible, patients who should not return to their former type of occupation are seen by the vocational adviser regarding new employment. If the need arises, a social service worker should evaluate the home situation. Both the physician and the patient will have a much clearer concept of the patient's physical and mental capabilities, resulting in more objective and realistic plans for the future.

Rehabilitation of the Aged Chronic Invalid

Joseph O. Smigel, M.D. In THE JOURNAL OF THE MEDICAL SOCIETY OF NEW JERSEY, 49:4:143, April 1952.

This report concerns the treatment of approximately one hundred and fifty patients, aged 60 or over, who were discharged from the rehabilitation department, their average age being 75.3 years at the inception of treatment.

The factor most instrumental in bringing success to the patient and to the rehabilitation group was the persistent continuous day-in-and-day-out treatment. The second most important instrument for success in rehabilitation of these patients, lay in giving each patient the maximum amount of exercise within his range of tolerance, and trying to increase his tolerance as rapidly as possible with no more assistance from the physical therapist than was absolutely needed.

Diathermy was used to produce deep relaxation where spasticity was present, relieve deep pains, and give transitory circulatory stimulation. Infra-red was used in much the same manner for the more superficially involved conditions or parts. Hot packs and dry heat have their specific fields of greatest effectiveness, but must be used with great care when treating hemiplegics.

Galvanic, faradic and sinewave therapy have been used in delayed cases to show the so-called "hopeless invalid" that movement was still possible in the affected part, and to institute rhythmic motion. Mecholyl and magnesium sulphate iontophoresis also was found useful for the relief of pain and concomitant tension in arthritics and in some vascular disturbances. Small and medium whirlpool baths have been used to great advantage in fracture cases, as well as for sprains and local swellings.

The whole body agitation tank, in the early stages of hemiplegia, has been found without peer. Intermittent vascular constriction showed remarkable results in chosen peripheral vascular diseases, especially in deep chronic and indolent ulcers—varicose or other—of the lower extremities.

Passive manipulation of the extremities (to bring out a complete range of motion of all joints) is important to prevent contractures and avoid arthritic and soft tissue changes, based mainly on enervation and loss of nutrition to the part. The parallel bars for retraining, and the body tank, have proved to be the most satisfactory of all.

Supportive apparatus (braces, canes, crutches, pulleys, walkers, wheel chairs) can be continued too long, so that they become a deterrent to recovery instead of an aid.

The criterion for determining the extent of recovery in these aged people became, "What can the patient do for himself that he was not able to do previously?"

Training in gait, getting in and out of a chair by himself, feeding himself without sloppiness, walking steps, going to the bathroom alone, dressing himself, are measures that are extremely satisfactory in their attainment.

Inherent in the care of the aged is the axiom that treatment should not be given up merely because total cure cannot be attained. The value of salvaging what remains is shown by some of the cases which were reported.

Orthopedic Treatment of Acute and Subacute Poliomyelitis with Curare and Stretching

Victor Raisman, M.D., F.R.C.S., Kew Gardens, New York. In NEW YORK STATE JOURNAL OF MEDICINE, 52:9:1147, May 1, 1952.

The orthopedic treatment of acute and subacute poliomyelitis has always had the same goals, namely, to prevent deformities and to work for the restoration of power in apparently paralyzed muscles. Owing to the fact that it is not possible to distinguish between muscles whose motor nerve cells are completely destroyed and those whose cells are merely inhibited or partially destroyed, a great deal of effort must be exerted to help all the muscles in the early phases in the hope that none will remain completely paralyzed.

The treatment being discussed here is based on a different concept for which Elizabeth Kenny deserves major historical credit. She demonstrated that the overpulling opponent of the paralyzed muscle was not normal but was itself affected and in a state of spasm or tightness. Her theories and treatment aroused violent controversy and stimulated research, which confirmed, on an electromyographic basis the presence of increased irritability or spasm in the acute phase in most of the muscles of the body. It also demonstrated, however, that the hot packs which she advocated did not lessen the spasm. On this basis, Ransohoff in Long Branch, New Jersey, in 1945, and, simultaneously, Paul of Iowa City, Iowa, began using curare to lessen the irritability and permit the restoration of muscles to their normal length by stretching. Their treatment, therefore, is based on the necessity of overcoming the muscle spasm or shortening, as rapidly as possible, by stretching the contracting muscles, and also on the value of early exercise including ambulation, if possible.

The injection of curare is given intramuscularly every eight hours, in the late afternoon after supper, and about midnight. Approximately three-quarters of an hour after the two daytime injections, the patient is visited by a physical therapist who stretches all the joints of the body through an ever increasing range. At the same time the patient is urged to exercise in any way he can and is gotten up to walk if at all possible, even if two people are needed merely to hold him upright.

When the orthopedic examination reveals complete relaxation, the curare is stopped, but the stretchings are continued. If several days later the relaxation has been maintained, the patient is discharged from the hospital. The length of the hospital stay is dependent on the length of the interval between the onset and the beginning of treatment, as well as on the extent of involvement.

Following the patient's discharge from the hospital, the stretchings are continued daily by the physical therapist, aided by members of the family. As long as there are any demonstrable weaknesses, the stretching must be continued with the same degree of vigilance as well as vigor. As recovery takes place, however, the stretching may become little more than a routine habit which the patient should consider in the same light as brushing the teeth twice daily.

Besides the stretchings, progressive resistance exercises, sinusoidal stimulation, and muscle reeducation are all utilized to aid the patient to recover normal muscle power.

With this treatment it is unnecessary to protect the patient from the development of deformities by applying braces or plaster casts. In fact, as long as the patient cooperates by continuing the stretchings, no deformities do develop. Furthermore, the circulatory changes frequently seen in the lower extremities of polio patients do not develop, and only minimal inequalities in leg length have been observed.

Degenerative Joint Disease in Mice Fed High-Protein Diets

Martin Silberberg and Ruth Silberberg. In JOURNAL OF GERONTOLOGY, 7:1:24, January 1952.

A number of investigators have stressed the importance of metabolic factors and of aging processes in the pathogenesis of osteoarthritis. Yet only a few experimental data are available to prove or disprove this point of view.

This report deals with observations made in the skeleton of mice fed protein-enriched diets throughout life.

In growing mice of strain C57 black fed diets containing 53 percent casein or 46 percent fish-protein from the time of weaning, skeletal development was accelerated as compared with conditions seen in animals of the same strain fed a stock diet containing 26 percent protein. Males responded more readily than females to the change in the dietary regimen.

Articular aging was retarded and the onset of degenerative joint disease was delayed in the mice fed the protein-enriched diets. These results are in marked contrast to those obtained by feeding a fat-enriched diet, which caused an acceleration of skeletal aging and an increased incidence of degenerative joint disease.

Renal Responses to Exercise, Heat and Dehydration

J. H. Smith, S. Robinson and M. Pearcy. In JOURNAL OF APPLIED PHYSIOLOGY, 4:8:659, February 1952.

This is an extension of a similar investigation carried out previously in which the renal response to exercise and to exercise in relation to environmental heat stress, was studied. The authors felt that the addition of dehydration to the stresses of exercise and heat would allow them to determine the lower physiological limits of renal plasma flow and glomerular filtration rate as well as add to knowledge of the adaptations of men in dehydration.

Renal plasma flow and glomerular filtration rate were studied in six adult males (in good physical condition and with no history of renal pathology) during rest and prolonged moderate exercise (a) in a cool environment, (b) in a hot environment and (c) when dehydrated by 4 to 8 percent of the body weight in a hot environment. Dehydration in the heat reduced the average glomerular filtration rate by 12 percent below controls in the resting men. Average decreases of 19 and 51 percent from the control level of glomerular filtration rate were observed respectively during exercise in the heat, and during exercise in the heat with dehydration. Exercise reduced renal plasma flow by an average of 22 percent in the cool environment, 31 percent in the heat, and 56 percent when the men were dehydrated in the heat. The filtration fraction increased from rest to exercise in all experiments. When water reabsorption was maximal in dehydration, there was a linear relationship between urine flow and glomerular filtration rate.

Empyema

T. Holmes Sellors, D.M., M.Ch., F.R.C.S. In BRITISH MEDICAL JOURNAL, No. 4760, p. 704, March 29, 1952.

Many pneumonias are cured by antibiotics; the more pneumonias cured, the fewer the empyemas. However, the distressing picture of an established chronic empyema, with toxemia, loss of lung function, and a deformed chest, should always be kept in mind as a warning of what may happen if the early stages are not recognized, or are improperly treated.

Even the most efficient treatment by drugs and surgery will be of little value unless at the same time the collapsed lung expands again. The lung must be induced to re-expand, not only to obliterate the empyema space, but to restore pulmonary function. Left to his own inclinations the patient will not move the affected part of the chest more than he can help; the instinct is to immobilize the area. But recovery is complete only when the chest walls are moving freely, and for practical purposes the movement of the chest wall is an index of lung expansion and function. A flattened rigid chest wall is almost certain to conceal an inactive area of lung.

The answer lies in the concentrated application of special breathing exercises which aim at producing a powerful and localized inspiratory excursion over the damaged area. Expiratory exercises, represented by puffing and blowing, should be ignored. The patient is instructed to breathe in deeply and forcibly against the light pressure of the physical therapist's hand without arching or bowing the spine. After a few days he should be able to concentrate the effort in any part of the chest and he must then practice without fail for 10 to 15 minutes every waking hour, with a check once or twice a day by the physical therapist. It is the conscientious patient who benefits and reduces his convalescence to a minimum.

The actual exercises are quite simple, but one must repeat that it is persistence and concentration that count. They are begun almost from the day of diagnosis and are continued with increasing intensity until complete recovery results, with the bad side of the chest moving even better than the normal side. The activities of the patient are encouraged by having him ambulant as soon as the grosser signs of toxemia have been eliminated. The practice of keeping a patient in bed during the whole period of aspiration or drainage is detrimental to early recovery. During the final stages of closure of the empyema, patients benefit by active exercise, and many of the patients walk eight to ten miles a day as part of their convalescent treatment.

Observations on Weather-Sensitive Arthritics During Controlled Exposures to Low and High Atmospheric Pressures

Commander H. L. Jones, M.C., U.S.N., and Lieutenant E. Reeves, M.S.C., U.S.N. In THE JOURNAL OF AVIATION MEDICINE, 23:1:77, February 1952.

Most arthritics claim to be sensitive to weather changes. Therefore, in 1946 a project was approved for the investigation of the influence of certain controlled atmospheric conditions on weather-sensitive arthritics.

Six weather-sensitive patients with chronic arthritis of different types (traumatic, rheumatoid, and hypertrophic) have been exposed repeatedly to increased barometric pressures up to about one-half atmosphere in a high pressure chamber. Pain responses in two cases (one of rheumatoid arthritis, one of traumatic) and possibly in a third (one of hypertrophic) suggested that increased barometric pressures of this order and for durations of about one hour were at least a major factor in decreasing their pain. Estimations of pain in the other three cases indicated no significant effect in one and too strong psychic factors for evaluation in a second. Other modifying factors, especially multiple joint involvement, in a third patient, were too pronounced for evaluation of the data obtained.

Much further work along these and similar lines is not only necessary before definite conclusions can be drawn but is clearly indicated especially in the light of the growing acceptance of the importance of stress, and Selye's adaptation syndrome in rheumatic and other diseases.

The flight surgeon and aviation physiologist with access to a barochamber and clinical material have a singular opportunity to investigate these problems.

A New Type of Brace for the Rehabilitation of the Weakened Shoulder

William E. Gazeley, M.D., and Wyllys A. Dunham, M.D. In THE JOURNAL OF BONE AND JOINT SURGERY, 34-A:1:228, January 1952.

An attempt was made to design a joint which would not only permit abduction (elevation) and adduction but would also assist in elevation, and at the same time would limit extension so that anterior subluxation of the shoulder joint would not occur. This has been accomplished by a type of universal joint in the axilla which permits abduction and adduction in various planes. Elevation of the arm to 90 degrees or higher is assisted by an adjustable spring in the hollow tubing of the axillary upright of the brace. The amount of resistance to lowering the arm may be varied by the size of the spring or by adjusting the tension of the spring at the lowest portion of the hollow tubing.

While the use of the sling is limited to a patient in bed or in a chair, the brace permits a much greater range of activity. It may be worn for a much longer period of time and it may also be used in a greater number of routine activities. It is particularly useful for the ambulatory patient. Another advantage in its use is that the tension adjustment of the spring permits varying degrees of assistance to the abductor muscles as function of the shoulder joint returns.

Stability of Body Function in the Aged: II: Effect of Exposure of the Body to Heat

Cletus L. Krag and William B. Kountz. In JOURNAL OF GERONTOLOGY, 7:1:61, January 1952.

Aged individuals usually are considered to respond differently than the young to exercise, drugs, trauma, infections, heat, and cold. Few reports are actually available, however, concerning the response of the aged. In this study are presented the results of exposure of a group of aged human subjects to heat. A similar study of the response to cold has already been published.

Observations were made upon 14 subjects between the ages of 57 and 95 years, and on 12 young subjects 21 to 32 years of age. The

subjects were exposed to heat by means of a standard type Burdick Fever Therapy Cabinet which was controlled to produce an ambient temperature of 100° to 115° F. (38° to 45° C.) the air of which was of approximately 100 per cent relative humidity. All subjects were observed under strictly controlled basal fasting conditions. All of the subjects were exposed to heat for 60 to 90 minutes (except for one subject) and, when necessary, exposure was terminated upon subjective distress. Rectal temperature, oral temperature, pulse rate, respiration, and oxygen consumption were measured before and during the exposure. The results indicated that although the aged withstood the exposure fairly well, their response in terms of changes in pulse rate and oxygen consumption was more variable than that observed in the young.

The Response of the Peripheral Venous Pressure to Exercise in Congestive Heart Failure

Roy E. Albert, M.D., and Ludwig W. Eichna, M.D. In AMERICAN HEART JOURNAL, 43:3:395, March 1952.

The resting venous pressure and the rise in venous pressure during exercise were determined in twenty-seven patients with heart disease of varying degrees of severity in twelve patients with pulmonary disease, and in twenty patients without cardiac or pulmonary disease.

In general, both the resting venous pressure and the rise in venous pressure during exercise increased with the severity of the congestive heart failure.

In patients with mild congestive failure, one-half of the determinations of venous pressure at rest were abnormally high, whereas approximately three-fourths of the determinations of the rise in venous pressure during exercise were abnormally increased. Almost all the patients with more severe congestive heart failure had both an elevated venous pressure at rest, and an abnormally increased rise in pressure during exercise. The venous pressure response to exercise is, therefore, a somewhat more sensitive index of the milder degrees of congestive heart failure than the venous pressure at rest; in severe congestive failure it offers no advantage.

Prescribing Physical Treatment in General Practice

Odon F. Von Werssowetz, M.D. In AMERICAN PRACTITIONER, 3:4:297, April 1952.

The essentials of a prescription for physical medicine should include: (1) Diagnosis, full and complete. (2) Disability. (3) Part to be treated. (4) Precautions or restrictions to be observed. (5) Treatment procedure to be used, which includes the number and frequency of treatment, home instructions, and any other pertinent details. (6) Date of recheck by the physician. It is well to include a date on the prescription when the physician wants to re-examine the patient. On that date, the physical therapist will refer the patient to the physician and will present a comprehensive summary of the patient's progress. This serves as a check on the therapeutic program, its progression, and need for modification.

Before referring patients for physical treatment, a physician should become familiar with the training, special abilities, and limitations of the physical therapist. It also saves embarrassing explanations if the physician becomes familiar with the equipment available to the therapist, as he then will not prescribe treatment that the physical therapist will be unable to furnish.

Physical treatment usually is used as an adjunct to other therapeutic procedures. To gain full advantage of it, it is necessary to select the patient with care, and with the knowledge that the procedure recommended has a definite place in the treatment and will be beneficial to the patient. If the patient does not respond or show any progress within a reasonable time, then physical therapy will not be of any value and should be terminated. This can be done only by the physician after proper evaluation of the condition. The physician should not refer for physical treatment patients whom he wants to get rid of or who show chronic or terminal illness without any hope of getting results.

Another common pitfall in prescribing physical therapy is allowing the patient to prescribe for himself. The physician should prescribe only the minimal number of different procedures that will accomplish the desired results. A "shot gun" type of prescription usually does more harm than good. And, finally, treatments should be sufficient in number and frequency and started as early as possible to obtain the optimal results.

Mechanical Aids to Treatment Made in Occupational Therapy Workshops

Mary S. Jones, M.C.S.P., M.A.O.T. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 15:7:153, July 1952.

This article describes a boned glove for patients with median-nerve paralysis, a working gauntlet for hand amputees, rockers for application to walking plasters, and wooden soles to raise the shoe on the other foot to equalize the length of the legs, working pylons for above-knee and below-knee amputees, and describes the ways these aids may be utilized.

The patients themselves aided greatly in the design and manufacture of these various mechanical aids. Some of them interested only in themselves became completely absorbed when asked to help design and make an aid for another patient, and thereby exercised and utilized the various muscles for which they were being treated. It is emphasized that work of this nature should always be available in an occupational therapy workshop to engage the interest of the skilled patient.

Disseminated Sclerosis

M. D. Rawkins, M.D., M.B., In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 15:8:178, August 1952.

As with other demyelinating diseases there is no medical treatment which will affect the course of disseminated sclerosis. The aim must be to prevent exacerbations rather than to attempt to improve established symptoms (except perhaps by physical therapy), as the destruction of axis cylinders which can always be demonstrated in the chronic lesion is not a reversible process.

Although many types of treatment have been tried, the treatment at present consists of assisting the patient to maintain a high-level of general physical health and to avoid emotional and mental stress.

Physical therapy has done a great deal in helping rehabilitation.

Book Reviews . . . . .

A Textbook of Orthopedics.

By M. Beckett Howorth, M.D., Clinical Professor of Orthopedic Surgery, New York University Post-Graduate Medical School; in association with Fritz J. Cramer, M.D., Donovan J. McCune, M.D., A. Wilbur Duryee, M.D., J. William Littler, M.D., and Walter A. Thompson, M.D. Hard cover; price, $16.00. Pp. 1110; illus. 463. W. B. Saunders Company, Philadelphia, 1952.

In writing the *Textbook of Orthopedics* Dr. Howorth and his collaborators have attempted to fill a great void in the orthopedic literature—for there is a notable paucity of basic, fundemental textbooks for students. Dr. Howorth by virtue of his experience and his native talent is well qualified for such an undertaking. He and the other authors have achieved their purpose.

The arrangement of the text will prove a boon to the beginner and to those who desire quick reference. The material presented in the first section provides a background for the remainder of the book and acquaints the novice with the general history of the orthopedic field. The section on anatomy briefly touches on orthopedic aspects of anatomy. The general principles of history taking, physical examination, and treatment from the orthopedic viewpoint are presented. All of these will appeal to the student.

The second section of the book concerns itself with regional orthopedics. Dr. Howorth, a well-known student and authority on posture, presents his views in this field. His comments will cause one to think in terms of body function which is the proper basis for orthopedic thought. The various sections of the body are considered in this portion of the book. Affections of each are enumerated briefly. Thus an easy reference to the common ailments of any body region is presented. Inasmuch as the next section of the book deals with the disorders themselves, the regional portion is necessarily brief. Unfortunately such an arrangement leads to duplication of material.

The section on orthopedic disorders is the essence of the book. A great deal of time is spent on congenital disorders with perhaps too much emphasis on several rare abnormalities which the average practioner is unlikely to see more than once in a lifetime. But no book is complete without a discussion of such conditions. The remaining material in this portion of the text is concisely and well presented.

The section on trauma deals with the common fractures and their treatment. Fortunately the authors do not dwell on any particular aspect of fractures such as mechanisms of occurence or technique of reduction, but rather mention general principles of treatment. Arthritis is dispensed with rapidly. The vascular disorders of bone are considered in detail. Metabolic and endocrine disorders are discussed in the light of the newer concepts. This large category of bone pathology still leaves much to speculation, and the authors have used care to avoid dogmatism in their presentation. Their handling of bone tumors is adequate for a general textbook.

An excellent and helpful innovation to the orthopedic textbook is the section on "Neurology in Relation to Orthopedic Practice". One of the great problems which confronts the orthopedic surgeon is the neurological patient. This section is a resume of the function of the nervous system with explanation and brief discussion of the result of damage at various levels of the nervous system. Neurological disorders including peripheral nerve lesions are presented.

In general, illustrations are adequate; many are excellent; however, in some the reproduction is such as to render detail poorly. Printing of the book is excellent, but the reviewer believes textbooks are better printed two columns to a page rather than full pagewidth, since the former allows more rapid reading. Unfortunately, the book is printed on a high quality, glossy paper which reflects light, thus tiring the eyes quickly, and making prolonged reading difficult.

The book, like most textbooks, is necessarily brief, and lacks detail in order to be kaleidoscopic in coverage. Orthopedic surgery has become so vast that it is doubtful whether any single textbook can cover the field fully. However, this book does serve to introduce the student to a wealth of material. Adequate references are listed so those desiring more information can know where to find it.

The authors are to be congratulated for an excellent piece of work which will be a good friend to the orthopedic student and to the student of allied fields.

Blakiston's Illustrated Pocket Medical Dictionary. *Editors: Normand L. Hoerr, A.B., Johns Hopkins University, Ph.D. and M.D., University of Chicago; Henry Willson Payne, Professor of Anatomy, School of Medicine, Western Reserve University, Cleveland, Ohio; and Arthur Osol, Ph.G., B.Sc. (Chemistry), Philadelphia College of Pharmacy and Science; M.Sc., Ph.D., University of Pennsylvania; Professor of Chemistry Department, Philadelphia College of Pharmacy and Science, Philadelphia—with the cooperation of a medical board. Washable binding; price, $3.25. Pp. 1032; illus. 60. The Blakiston Company, New York, 1952.*

The first edition of this pocket dictionary has many of the fine features of the large medical dictionary published by Blakiston, which was reviewed in this magazine in December, 1949. Two of the editors of the large dictionary were also editors of the pocket edition and they, with the editorial board, have done a fine job in the preparation of this smaller work.

The dictionary contains over 33,000 entries complete with definition and pronunciation. A cursory check by this reviewer revealed that most words used in modern physical medicine were included and well defined. Additions have been made in compliance with recent trends. Many of the terms that were cited as being omitted in the 1949 review are included in this pocket edition. "Physiatrics" is defined, although "physiatrist" is not; one looking under "iontophoresis" is referred to "ion transfer"; "ultrasonics" is listed and defined. The definition of "ion transfer", however, can still be considered as incorrect. It would be almost impossible to compile such a work without minor errors.

As in the larger dictionary, the tables and illustrations each have their separate sections, which

simplifies the problem of a quick reference. The anatomic tables of bones, nerves, joints, ligaments, and muscles are very good—particularly the one on muscles. Anatomic terminology conforms to newer standards in these tables, which should avoid much confusion. Other tables include those on composition of various foods, blood constituents, elements, hormones, medical signs and symbols, Ely's table of the duration of pregnancy, common Latin or Greek terms and abbreviations used in prescription writing, thermionic equivalents, vitamins, and weights and measures.

The final section is devoted to illustrative plates, with 16 of these in color. The plates used are particularly fine, although a physical therapist might wish that there were more plates of muscles, however, because of space in a pocket dictionary, cuts must be made somewhere. Of interest were the illustrations of the types of bandages, of typical fractures and of various operative positions, which have more meaning when they are placed in a section by themselves rather than interspersed in the main contents of the dictionary.

Convenience for the user has certainly been a prime consideration in the preparation of this dictionary. The arrangement of the book with its illustrations and tables in one place will be a great convenience. The book is just the right size for portability, which should make it popular with students. The print is necessarily small, but quite legible. All in all the book should find great popularity in the auxiliary medical groups as well as among others who occasionally find the need of looking up medical words.

Calculation of Industrial Disabilities of the Extremities. *By Carol O. Rice, M.D., Ph.D. F.A.C.S., Clinical Associate Professor of Surgery, University of Minnesota Medical School. Cloth; price, $10.50. Pp. 289; illus. 160. Charles C Thomas, Springfield, Illinois, 1952.*

This book is written primarily for the physician who is called upon to evaluate disabilities of the extremities, whether he be general surgeon, orthopedist, or physiatrist. Unlike many previous volumes on this subject it is based solely on objective findings and does not require the physician to judge intangibles; in fact, the author states that judgment of such factors falls within the province of the Industrial Commission. To anyone who has attempted to evaluate disabilities by the use of the complicated scales previously advocated, the present book will prove to be of great value. At the same time the author does not go to the opposite extreme and so simplify his method that it can prove of value only in the isolated case that exactly matches a predetermined scale.

Dr. Rice starts his book with an excellent discussion and explanation of the various methods of evaluating industrial disabilities which are currently in use. This provides an excellent review, especially for a newcomer to the field. He then goes on to a brief review of the anatomical considerations which are involved. Since most disabilities are calculated on the inability of the member to be moved through its normal range, he spends the greatest part of this chapter on normal range of motion. The diagrams in this chapter are excellent and the motions at each joint are well explained.

The chapter on "Relative Values" provides one of the best available explanations of these very important but poorly understood factors in disability evaluation. In order for a book of this type to be of value it must provide methods of rating and recording which can be applied to the standards set up by the various states. The author therefore gives tables of the relative values placed by various states on the major disabilities, tables giving relative values of portions of a member to the whole member according to various authorities, as well as individual tables and diagrams giving relative values of individual units to the whole member.

The last half of the book is concerned with a detailed explanation of the author's method of evaluation. He considers all units of motion at each involved joint in reaching a disability rating. All of his calculations are based on the degrees of lost motion expressed as percentage of disability. He includes diagrams for each joint and in addition presents hypothetical cases to show the exact method used.

For the physician called upon to see and evaluate patients with industrial disabilities of the extremity this is a useful and important book, and should certainly prove to be a welcome addition to his library, since it is able to provide a purely objective method of recording findings and does not require the physician to consider such abstract factors as security, endurance, and prestige.

It is doubtful, however, whether this book will have much appeal for the physical therapist, except for one working largely with traumatic cases who may be called upon to help the physician in examinations, and who may find the method of recording disabilities useful in record keeping. The tables and diagrams of range of motion and limitation of motion are excellent, and for this reason the book can be recommended as a reference work for the therapist.

Annual Review Of Physiology. *(Volume 14). By Victor E. Hall, Editor, University of California School of Medicine, Los Angeles; Jefferson M. Crismon, Associate Editor, Stanford University, and Arthur C. Giese, Associate Editor, Stanford University. Cloth. Pp. 589; Price, $6.50. Published by Annual Reviews, Inc., and the American Physiological Society, Stanford, California, 1952.*

The Annual Review of Physiology continues its very high level of review articles of the entire field of physiology. To the physiologists this book is a "must." To the physiatrist there are, of course, certain chapters in this book which are of more importance than others and in the present issue the chapters which are of most importance to the field of Physical Medicine are the chapter by Robinson on the Physiological Effects of Heat and Cold; the chapter by Pappenheimer on the Physiology of Peripheral Circulation; the chapters on Excitement and Transmission in the Nervous System by Brooks and Fuortes; and on Somatic Function of the Central Nervous System by Hines. Of less direct interest to the physiatrist, but nevertheless of very considerable importance in the field of muscle physiology, is the chapter on Comparative Physiology of Invertebrate Muscle. There is a very interesting prefatory chapter on the Organization of Science by R. W. Gerard which

makes very worthwhile reading. It is of course impossible to review a book which is essentially a review. For those in the field of Physical Medicine whose interest is in research, this book has become an annual essential.

Bone Tumors. *By Louis Lichtenstein, M.D., Senior Pathologist, General Medical and Surgical Hospital, Veterans Administration Center, Los Angeles. Formerly Associate Pathologist, Hospital for Joint Diseases, New York. Consultant in Bone Tumors, Tumor Registry of the California Medical Association Cancer Commission. Sometime Lecturer in Bone Pathology: Medical Extension, University of California at Los Angeles. Cloth; price* $10.50, *Pp.* 315; 155 *illus. First Edition. C. V. Mosby Company, St. Louis,* 1952.

In this book the author is well qualified to bring his extensive experience to bear on a topic that is of immense importance to the orthopedic surgeon and the radiologist. The opening chapter contains the author's classification of all known primary neoplasms of bone, both benign and malignant. He has attempted to indicate the malignant counterpart of each of the benign tumors listed and to reserve a place for such malignant tumors, not already defined, in the event that they may be observed and recognized in the future. In a few instances the author points out controversial views concerning the histogenesis of a malignant tumor (e.g., Ewing's sarcoma of bone). The classification serves as a framework and the subsequent chapters elaborate upon its subdivisions. The clinical history, the pathological observations, the roentgen findings, and the treatment are all appropriately discussed with each entity. Special consideration is given to prognosis in the case of the malignant and recurrent tumors. The final chapter deals with non-neoplastic lesions of bone which have been mistaken for new growths.

Throughout the book are many fine photographs showing the histology and the roentgen findings. Each chapter is followed by a complete bibliography. The book itself is well written and should find a place in any well-equipped library.

The Treatment of Injuries to the Nervous System. *By Donald Munroe, M.D. F.A.C.S., Surgeon in Chief, Department of Neurosurgery, The Boston City Hospital. Cloth; price,* $7.50. *Pp.* 284; *illus.* 47. *W. B. Saunders, Philadelphia,* 1952.

The author is well qualified to produce a textbook of this nature, which he states is intended primarily for the general practitioner and general surgeon. The first five of the ten chapters are devoted to the treatment of injuries of the central nervous system and spinal cord, the cranial nerves, spinal roots, peripheral nerves, and the autonomic system. There are chapters outlining emergency surgical procedures and the effects of spinal anesthesia. The concluding three chapters are devoted to the general problems of rehabilitation, particularly of cord injuries, including economic and management aspects.

The discussion of central and cord injuries is excellent, presenting the total care of the patient from initial injury through ambulation. All problems are considered, for example, bracing of the trunk and lower extremities, and both early and late bowel and bladder care and training.

The remaining chapters concerning treatment of injuries of other portions of the nervous system are anticlimatic and leave much to be desired. For instance, the section on peripheral nerves makes no mention of functional bracing of the hand. This important concept must certainly be considered as much as surgical treatment if optimum upper extremity functional return is to be expected. One would also expect, but does not find, some note made of the use of electrical testing including electromyography in determining the integrity of the peripheral nerve and perhaps the necessity for explorative surgery. Simple electrical testing is more within the realm of the general surgeon than actual nerve suture and merits consideration.

The discussion of the cost of medical care in paraplegia is informative as is the section which sets up six requirements for rehabilitation, but the space might better be utilized by expanding the deficiencies noted in the chapters not concerned with central and cord injuries.

The illustrations and charts supplement the text well. The type and format are pleasing and permit comfortable reading. This reviewer suggests that the title might be more informative if it were restricted to that section which takes up more than two-thirds of the actual treatment of injuries; that is, the central nervous system and spinal cord. The section on treatment of injuries to these two areas is certainly to be recommended because the author has surmounted the difficult task of presenting complete care, and this must be understood by all those concerned with rehabilitation if treatment is to be adequate.

Steps Toward the Prevention of Chronic Disease. A Summary of the National Conference on Chronic Disease: Preventive Aspects, Held March 12-14, 1951.

Sponsor: Commission on Chronic Illness; Co-Sponsors: U. S. Public Health Service, National Health Council. Paper Cover. Price, $.50; *pp.* 31. *Health Publications Institute, Inc., Raleigh, N. C.,* 1952.

When the National Conference on Chronic Disease met in Chicago March 12-14, 1951, the members had as their focus the question "can early detection of chronic illness and other preventive measures match the success achieved in controlling acute communicable diseases?" This pamphlet is a summary of the highlights of that conference. The members of the conference are working with the idea in mind that much chronic illness is preventable and are searching for facts on which to base that hope. They have drawn together current knowledge and experience that gives substance to the conviction that much chronic illness can be prevented.

The pamphlet is broken down into seven main topics. Under "A Promise and a Challenge," is discussed the major chronic diseases and factors believed to be important in their cause or control. "Research—The Basis for Progress" is discussed under the topics of fundamental research in the natural sciences, accumulation of adequate statistical data, mass screening, and studies of motivation. In "The Physician's Role" is described in concise form the role of practicing physicians in primary and secondary prevention; while "What the Community Can Do" discusses the role the community can play in prevention of chronic illnesses; and "Training Professional Workers"

considers the assistance a "preventive team" can offer. "Public Education for Prevention" was discussed as an important factor, and "Action Now" outlines what the Commission on Chronic Illness can do now to promote the prevention of chronic disease.

This pamphlet in its concise and well written form merits careful study by all persons and organizations concerned with chronic disease.

The Musculoskeletal System: A Symposium Presented at the Twenty-Third Graduate Fortnight of the New York Academy of Medicine, October 9-20, 1950. *Mahlon Ashford, M.D., editor. Cloth. Price,* $6.50. *Pp.* 368; *illus.* 103. *First edition. The Macmillan Company, New York,* 1952.

The Graduate Fortnight has been an annual presentation of the New York Academy of Medicine since 1927. Its general purpose is the continued education of the physician in general practice. Outstanding specialists in the various fields of and allied to medicine develop a single subject chosen for its timeliness as well as its outstanding importance to medicine and surgery. This is the first of a series to appear in book form. Future Graduate Fortnights will be published annually.

The musculoskeletal system was selected for development because of its significance for present day medical practice. The problem of an aging population with its increasing number of persons suffering from diseases and disabilities of the musculoskeletal system places a strain on our entire economic system. As the problem of prevention and treatment becomes national as well as individual, it behooves the practitioner to acquaint himself with advances which have been made in the treatment of rheumatic diseases and allied conditions; procedures for the rehabilitation of victims of muscular, arthritic and skeletal disability, and physiologic, metabolic, and therapeutic principles essential to an understanding of the entire problem.

This volume deals with diseases and disabilities affecting the musculoskeletal system. It contains a series of sixteen formal lectures which present the more recent advances in the understanding of the musculoskeletal system and its diseases of muscle and of bones, with, in each instance, preliminary consideration of some of the more recent advances in knowledge of the clinical and biological characteristics of these structures. The series closes with consideration of some of the more important orthopedic problems.

This is a technical reference book which approaches the subject of diseases of the musculoskeletal system strictly from the viewpoint of the medical practitioner.

Rehabilitation and treatment of these diseases by physical medicine is not dealt with in this volume.

A Textbook of General Physiology. *Hugh Davson, D.Sc., Scientific Staff, Medical Research Council. Honorary Research Associate, University College, London. Cloth.* Price, $7.00. Pp. 659 *with* 288 *illustrations. The Blakiston Company, Philadelphia,* 1951.

This textbook is written in the terminology of physics and chemistry for students interested in the fundamental processes of general physiology. A knowledge of physics and chemistry, rather than biology, is needed for an understanding of the book. Some subjects which the author believes are adequately treated in standard texts of mammalian physiology, are treated briefly or avoided entirely. Other subjects, although included in most standard texts, are dealt with in more than usual detail. The basic, but rather unorthodox approach to general physiology is indicated by the following titles of the six sections of the book: 1. The Structural Basis of Living Matter. 2. Transformation of Energy in Living Systems. 3. Transport of Water and Solutes. 4. Characteristics of Excitable Tissue. 5. The Mechanisms of Contraction of Muscle. 6. Light: Its Effect On, and Its Emission By, the Organism.

The restricted scope of the book will somewhat limit its use as a single textbook of general physiology, but in conjunction with other textbooks it will be very valuable to graduate students in general physiology. It is an excellent supplementary textbook for mammalian physiologists, and especially for those with primary interest in neuromuscular mechanisms. This presentation, in readable form, of recent advances made possible by new physical and chemical technics, will be particularly valuable to those interested in keeping their knowledge of physiology up-to-date.

The author's wide experience in the fields of ionic equilibria and membrane permeabilities and his association with the active London group of physiologists have resulted in a highly authoritative and thoroughly modern book. The author's enthusiasm, his pleasing style, and his habit of referring to interesting facts about little known biological forms, all contribute to make this imposing collection of facts an interesting volume.

The illustrations are excellent and the plates showing electronmicrographs are especially outstanding. Each chapter is followed by a list of well chosen references.

The Art of Eloquence. *By Theodore R. McKeldin, L.L.B., L.L.D., Governor of Maryland, and John C. Krantz, Jr., Ph.D., Sc.D., Professor of Pharmacology, University of Maryland, School of Medicine. Cloth; price,* $3.00. *Pp.* 255. *The Williams and Wilkins Co., Baltimore,* 1952.

All of us at one time or another find it necessary to speak in public. This book offers excellent suggestions, written in an interesting manner, to assist the inexperienced speaker.

Basic principles of public speaking in simple nontechnical language are illustrated with sample addresses by the authors. The importance of the spoken word in the affairs of men and in one's personal life is emphasized. Methods of vocabulary building are discussed. Specific suggestions given for planning and outlining a speech seem particularly pertinent. Platform appearance, technics for delivery and voice control are presented well. Chapters on radio and television appearance are included. Hints on being chairman and toastmaster are especially useful and practical.

The physical therapist who wishes to become more adept at public speaking or presiding should find this book quite helpful. It is especially recommended to chapter presidents and to any others who are faced with the task of public speaking.

The reviews here published have been prepared by competent authorities and do not represent the opinions of the American Physical Therapy Association.

Classified WANT-ADS

OPPORTUNITY for qualified physical therapists in fully accredited 115-bed hospital, specializing in Physical Medicine and Rehabilitation. Medical direction Diplomate, American Board of Physical Medicine and Rehabilitation. Patients mostly children, no acute cases. Excellent salary and working conditions. Mild winters, buildings air conditioned. Write Aline Bletcher, Chief Physical Therapist, Gonzales Warm Springs Foundation for Crippled Children, Gonzales, Texas.

PHYSICAL THERAPIST: qualified, wanted in 113-bed hospital located near Chicago, Illinois. Newly organized and active department. Excellent salary, vacation and sick leave policy. Apply Personnel Director, Highland Park Hospital, Highland Park, Illinois.

GROWING INSTITUTION needs additional staff physical therapist. Five-day week, three-week yearly vacation, opportunities for advancement. Write to Miss G. Margaret Gleave, Executive Director, the CURATIVE WORKSHOP of Racine, 2335 Northwestern Ave., Racine, Wisconsin.

WANTED: Qualified physical therapist. Will pay travel expenses to interview likely candidates. Salary open. Write C. Warner Litten, Business Manager, Fargo Clinic, Box 1388, Fargo, North Dakota.

QUALIFIED physical therapist desired by Rehabilitation Hospital (31 inpatient capacity). Salary adjustable. OPD, PT and OT clinical training center. Write Medical Director, Miriam Hospital, 501 Bacon, Webster Groves, Mo.

WANTED: Two physical therapists; one director, one staff, for convalescent home for crippled children affiliated with State Department of Health. Write Junior League Home, 2400 White Avenue, Nashville, Tenn.

WANTED: One physical therapist. Agency program offers service to crippled children under medical prescription to patients in the clinic, includes care of cerebral palsy, postpoliomyelitis patients and other crippling conditions. Five day week, liberal holidays, vacation given and sick leave allowance. Write to Mr. Jack H. Foster, Personnel Director, Court House, Arlington, Virginia.

PHYSICAL THERAPIST: Assistant in established public school program. Salary schedule, retirement plan, good working conditions. Ten or twelve months employment as you prefer. Apply to: Assistant Superintendent, Lansing Public Schools, 419 N. Capitol Avenue, Lansing, Michigan.

WANTED: Physical therapist (female) for full or part-time work in orthopedic surgeon's office. Write to Daniel B. Eck, M.D., 144 S. Harrison St., East Orange, N. J.

WANTED: Physical therapist, qualified, female. Physical therapy service in homes, also physical therapy clinics working closely with orthopedic treatment clinics and diagnostic clinics. Excellent starting salary. Car is necessary. Other benefits include two weeks annual sick leave which is accumulative to ninety days, three weeks annual vacation, and a retirement plan. Write: Director, R. L. Loftin, M.D., Bay Co. Dept. of Health, Bay Co. Bldg., Bay City, Michigan.

WANTED: Qualified physical therapist as Assistant to Chief Physical Therapist in 322-bed hospital. Active department includes polio work, rehabilitation and Crippled Children's Clinics. Pleasant working conditions. Permanent opening with complete maintenance, social security, paid sick leave, and vacation and other personnel benefits. For complete details write Mr. F. C. Curran, Director, Eastern Maine General Hospital, Bangor, Maine.

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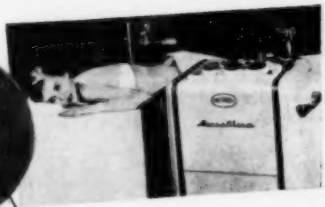

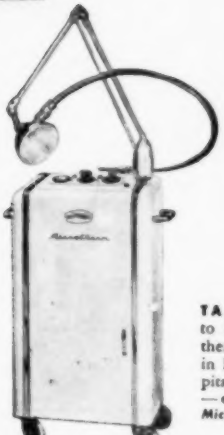

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